Understanding the Evidence Statement Tables for the PARCC Summative Assessments in Mathematics

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PARCC Assessment Priorities

1. Determine whether students are **college- and career-ready** or on track
2. **Compare performance** across states and internationally
3. Assess the **full range of the Common Core Standards**, including standards that are difficult to measure
4. Measure the **full range of student performance**, including the performance of high and low performing students
5. Provide **data *during* the academic year** to inform instruction, interventions and professional development
6. Provide **data for accountability**, including measures of growth
7. Incorporate **innovative approaches** throughout the system

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PARCC Assessment Design

English Language Arts/Literacy and Mathematics, Grades 3-11

BEGINNING OF YEAR

END OF YEAR

2 Optional Assessments/Flexible Administration

Diagnostic Assessment
- Early indicator of student knowledge and skills to inform instruction, supports, and PD
- Non-summative

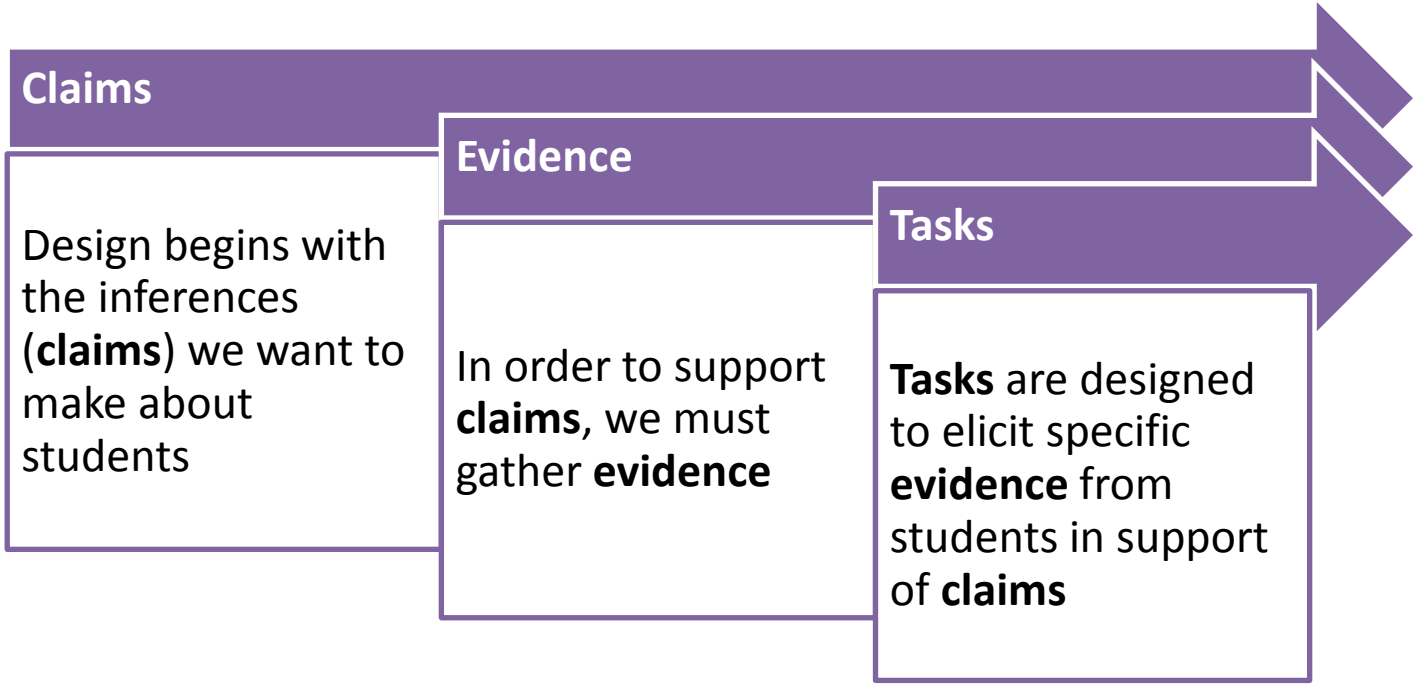
Mid-Year Assessment
- Performance-based
- Emphasis on hard-to-measure standards
- Potentially summative

Performance-Based Assessment (PBA)
- Extended tasks
- Applications of concepts and skills
- Required

End-of-Year Assessment
- Innovative, computer-based items
- Required

Speaking And Listening Assessment
- Locally scored
- Non-summative, required

Evidence-Centered Design (ECD) for the PARCC Assessments



ECD is a deliberate and systematic approach to assessment development that will help to **establish the validity** of the assessments, **increase the comparability** of year-to year results, and **increase efficiencies/reduce costs**.

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Claims Structure: Mathematics

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.

Total Exam Score Points:
82 (Grades 3-8), 97 or 107(HS)

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.

~37 pts (3-8),
~42 pts (HS)

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.

~14 pts (3-8),
~23 pts (HS)

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 pts (3-8),
14 pts (HS)
4 pts (Alg II/Math 3 CCR)

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 pts (3-8),
18 pts (HS)
6 pts (Alg II/Math 3 CCR)

Sub-Claim E: Fluency in applicable grades (3-6)

The student demonstrates fluency as set forth in the Standards for Mathematical Content in her grade.

7-9 pts (3-6)

[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 3 – 8, Sub-Claim C includes only Major Content. For High School, Sub-Claim C includes Major, Additional and Supporting Content.

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Overview of Task Types

- The PARCC assessments for mathematics will involve three primary types of tasks: Type I, II, and III.
- Each task type is described on the basis of several factors, principally the purpose of the task in generating evidence for certain sub claims.

Source: Appendix D of the PARCC Task Development ITN on page 17

Overview of PARCC Mathematics Task Types

Task Type	Description of Task Type
I. Tasks assessing *concepts, skills and procedures*	• Balance of conceptual understanding, fluency, and application • Can involve any or all mathematical practice standards • Machine scorable including innovative, computer-based formats • Will appear on the End of Year and Performance Based Assessment components • Sub-claims A, B and E
II. Tasks assessing *expressing mathematical reasoning*	• Each task calls for written arguments / justifications, critique of reasoning, or precision in mathematical statements (MP.3, 6). • Can involve other mathematical practice standards • May include a mix of machine scored and hand scored responses • Included on the Performance Based Assessment component • Sub-claim C
III. Tasks assessing *modeling / applications*	• Each task calls for modeling/application in a real-world context or scenario (MP.4) • Can involve other mathematical practice standards • May include a mix of machine scored and hand scored responses • Included on the Performance Based Assessment component • Sub-claim D

For more information see PARCC Task Development ITN Appendix D.

Design of PARCC Math Summative Assessments

- Performance Based Assessment (PBA)
  - Type I items (Machine-scorable)
  - Type II items (Mathematical Reasoning/Hand-Scored – scoring rubrics are drafted but PLD development will inform final rubrics)
  - Type III items (Mathematical Modeling/Hand-Scored and/or Machine-scored - scoring rubrics are drafted but PLD development will inform final rubrics)
- End-of-Year Assessment (EOY)
  - Type I items **only** (All Machine-scorable)

Evidence Statement Tables:
Types of Evidence Statements

Several types of evidence statements are being used to describe what a task should be assessing, including:

1. Those using **exact standards language**
2. Those transparently **derived from exact standards** language, e.g., by splitting a content standard
3. **Integrative evidence statements** that express plausible direct implications of the standards without going beyond the standards to create new requirements
4. **Sub-claim C & D evidence statements**, which put MP.3, 4, 6 as primary with connections to content

Evidence Statements using Exact Standards Language

1. Those using **exact standards language**

PARCC

Grade 3 - PBA

Per the PARCC Calculator Policy, PARCC mathematics assessments for Grades 3 – 5 will not allow for calculator usage.

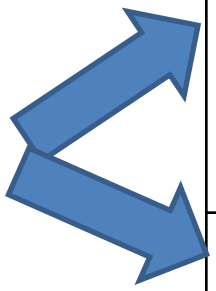
Evidence Statement Key	Evidence Statement Text	Clarifications	MP
3.OA.1	Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as* 5×7.	i) Tasks involve interpreting products in terms of equal groups, arrays, area, and/or measurement quantities. For more information see CCSS Table 2, p. 89. ii) Tasks do not require students to interpret products in terms of repeated addition, skip-counting, or jumps on the number line. iii) The italicized example refers to describing a context. But describing a context is not the only way to meet the standard. For example, another way to meet the standard would be to identify contexts in which a total can be expressed as a specified product.	4, 2

Grade 8 - PBA

Key	Evidence Statement Text	Clarifications	MP
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 center on the properties and equivalence, not on simplification. For example, a task might ask a student to classify expressions according to whether or not they are equivalent to a given expression.	7

Evidence Statements Derived from Exact Standards

2. Those transparently **derived from exact standards** language, e.g., by splitting a content standard. Here 8.F.5 is split into 8.F.5-1 and 8.F.5-2.



Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP
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) Pool should contain tasks with and without contexts.	MP.2, MP.5
8.F.5-2	Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	i) Pool should contain tasks with and without contexts.	MP.2, MP.5, MP.7

Evidence Statements Derived from Exact Standards

PARCC

Grade 3 - PBA

For the PBA, tasks will assess 3.OA.3. This CCSS has been split into 4 Evidence Statements 3.OA.3-1, 3.OA.3-2, 3.OA.3-3 and 3.OA.3-4. The full text of 3.OA.3 is listed in the CCSS.

For Type 1 tasks, "Evidence Statement Text" may represent all or part of CCSS.

"Clarifications" provide item developers with guidance on the depth and breadth of the tasks.

"MP" - Mathematical Practices provide guidance on how content should be connected to practices.

Evidence Statement Key	Evidence Statement Text	Clarifications	MP
3.OA.3-1	Use multiplication within 100 (both factors less than or equal to 10) to solve word problems in situations involving equal groups, arrays, or area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problems.	i) All products come from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) 50% of tasks involve multiplying to find the total number (equal groups, arrays); 50% involve multiplying to find the area. iii) For more information see CCSS Table 2, p. 89 and the Progression document for Operations and Algebraic Thinking	1, 4
3.OA.3-2	Use multiplication within 100 (both factors less than or equal to 10) to solve word problems in situations involving measurement quantities other than area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	i) All products come from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) Tasks involve multiplying to find a total measure (other than area). iii) For more information see CCSS Table 2, p. 89 and the Progression document for Operations and Algebraic Thinking	1, 4
3.OA.3-3	Use division within 100 (quotients related to products having both factors less than or equal to 10) to solve word problems in situations involving equal groups, arrays, or area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	i) All quotients are related to products from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) A third of tasks involve dividing to find the number in each equal group or in each equal row/column of an array; a third of tasks involve dividing to find the number of equal groups or the number of equal rows/columns of an array; a third of tasks involve dividing an area by a side length to find an unknown side length. iii) For more information see CCSS Table 2, p. 89 of and the Progression document for Operations and Algebraic Thinking.	1, 4
3.OA.3-4	Use division within 100 (quotients related to products having both factors less than or equal to 10) to solve problems in situations involving measurement quantities other than area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	i) All quotients are related to products from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) 50% of tasks involve finding the number of equal pieces; 50% involve finding the measure of each piece. iii) For more information see CCSS Table 2, p. 89 and the Progression document for Operations and Algebraic Thinking	1, 4

Mathematical Practices listed on the top row are Ipso Facto. The se MP's are a direct consequence of the Evidence Statement. MP's listed on the second row were considered when developing items.

Integrative Evidence Statements

3. **Integrative evidence statements** that express plausible direct implications of the standards without going beyond the standards to create new requirements

An Evidence Statement could be integrated across

- **Grade/Course** – Ex. 4.Int.2 (Integrated across Grade 4)
- **Domain** – F.Int.1 (Integrated across the Functions Domain)
- **Cluster** - S-ID.Int.1 (Integrated across S-ID Interpreting Categorical & Quantitative Data)

The extension numbers ".1, .2, 3-3" on all "Int" Evidence Statements are used for numbering/ordering purposes for item developers.

Integrative Evidence Statements

Grade/Course – Ex. 4.Int.1 (Integrated across Grade 4)

Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP
4.Int.1	Solve one-step word problems involving adding or subtracting two four-digit numbers.	The given numbers are such as to require an efficient/standard algorithm (e.g., 7263 + 4875, 7263 – 4875, 7406 – 4637). The given numbers do not suggest any obvious *ad hoc* or mental strategy (as would be present for example in a case such as16,999 + 3,501 or 7300 – 6301, for example). i) Grade 4 expectations in CCSSM are limited to whole numbers less than or equal to 1,000,000; for purposes of assessment, both of the given numbers should be limited to 4 digits.	MP.1

Draws on content from ALL of grade 4

Integrative Evidence Statements

Cluster - S-ID.Int.1
(Integrated across S-ID Interpreting Categorical & Quantitative Data)

S-ID.Int.1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-ID, excluding normal distributions and plotting residuals, and limiting function fitting to linear functions and exponential functions with domains in the integers.	None	1, 2, 5, 6, 4
S-ID.Int.2	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-ID excluding normal distributions and limiting function fitting to quadratic functions.	None	1, 2, 5, 6, 4

Sub-claim C and Sub-claim D Evidence Statements

4. **Sub-claim C & Sub-claim D Evidence Statements**, which put MP. 3, 4, 6 as primary with connections to content

Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP
HS.C.5.11	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.	i) For example, students might be asked how many positive solutions there are to the equation ex = x+2 or the equation ex = x+1, explaining how they know. The student might use technology strategically to plot both sides of the equation without prompting.	MP.3

High School Evidence Statement
Subclaim C (Reasoning)

Sub-claim C and Sub-claim D Evidence Statements

Within "Evidence Statement Key", these Evidence Statements will address Subclaim C (Reasoning) and Subclaim D (Modeling) .

Within these Subclaim C (Reasoning) and Subclaim D (Modeling) Evidence Statements, the Content Scope lists the CCSS that will be assessed

Grade 3 - PBA

Evidence Statement Key	Evidence Statement Text	Clarifications	MP
3.C.7	Distinguish correct explanation/reasoning from that which is flawed, and-if there is a flaw in the argument-present corrected reasoning. (For example, some flawed "student" reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 2.NBT.	Tasks may have scaffolding if necessary in order to yield a degree of difficulty appropriate to Grade 3.	3, 6
3.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 3, requiring application of knowledge and skills articulated in the Evidence Statements on the PBA (excludes Reasoning Evidence Statements).	Tasks may have scaffolding if necessary in order to yield a degree of difficulty appropriate to Grade 3.	4
3.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to Grade 3, requiring application of knowledge and skills articulated in 2.OA.A, 2.OA.B, 2.NBT, and/or 2.MD.B.	Tasks may have scaffolding if necessary in order to yield a degree of difficulty appropriate to Grade 3.	4

Please note within 3.C.7 and 3.D.2, the Evidence Statements will address on grade level Reasoning (3.C.7) and Modeling (3.D.2) but will utilize "securely held (grade 2) content".

Resources

- Any publicly released assessment policies, item prototypes, PARCC Model Content Frameworks, and other valuable resources can be found at www.PARCConline.org

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Thank You