



**Informational Guide**  
**to**  
**Grade 6 Math**  
**Summative Assessment**

# Overview

The PARCC assessment system is a cohesive set of tests that students will take during the school year that include summative and non-summative components (diagnostic and mid-year assessments). 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 6 Math Summative Assessments:

- PARCC Claims Structure
- PARCC Task Types
- PARCC Test Blueprint
- PARCC Evidence Statements and Tables<sup>◇</sup>
- PARCC Assessment Policies

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

# Claims Structure\*: Grade 6

**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<sup>1</sup> with Connections to Practices**

The student solves problems involving the Major Content<sup>1</sup> for her grade/course with connections to the Standards for Mathematical Practice.

26 points

**Sub-Claim B: Additional & Supporting Content<sup>2</sup> with Connections to Practices**

The student solves problems involving the Additional and Supporting Content<sup>2</sup> for her grade/course with connections to the Standards for Mathematical Practice.

14 points

**Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content<sup>3</sup> (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**

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> For Grades 3-8, Sub-Claim C includes only Major Content.

\*Updated July 2015 to reflect new point totals

# Overview of PARCC Mathematics Task Types

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

# Grade 6 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	24	24
	Type I 2 Point	6	12
	Type I 4 Point	1	4
	Type II 3 Point	2	6
	Type II 4 Point	2	8
	Type III 3 Point	2	6
	Type III 6 Point	1	6
	<b>Total</b>	<b>38</b>	<b>66</b>
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 Common Core State 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.corestandards.org/Math/>.

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<sup>S</sup>** (Integrated across Grade 4)
- **Conceptual Category** – **F.Int.1<sup>S</sup>** (Integrated across the Functions Conceptual Category)
- **Domain** – **4.NBT.Int.1<sup>S</sup>** (Integrated across the Number and Operations in Base Ten Domain)
- **Cluster** – **3.NF.A.Int.1<sup>S</sup>** (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<sup>§</sup> -- 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<sup>§</sup> – 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<sup>§</sup> – 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<sup>§</sup> - 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.

<sup>§</sup> 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 6 Evidence Statements

## Listing by Type I, Type II, and Type III

The PARCC Evidence Statements for Grade 6 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 the Type III items.



## Grade 6 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	6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."</i>	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2	No
A	6.RP.2	Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b \neq 0$ , and use rate language in the context of a ratio relationship. <i>For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."</i> <sup>1</sup>	i) Expectations for unit rates in this grade are limited to non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2	No
A	6.RP.3a	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers	MP.2 MP.4 MP.5 MP.7 MP.8	Yes
A	6.RP.3b	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. b. Solve unit rate problems including those involving unit pricing and constant speed. <i>For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?</i>	i) Expectations for unit rates in this grade are limited to non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.5 MP.8	Yes
A	6.RP.3c-1	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity);	i) Tasks may or may not contain context. ii) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.5 MP.7 MP.8	Yes
A	6.RP.3c-2	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. c. Solve problems involving finding the whole, given a part and the percent.	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.5 MP.7 MP.8	Yes

## Grade 6 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	6.RP.3d	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	<ul style="list-style-type: none"> <li>i) Tasks may or may not contain context.</li> <li>ii) Tasks require students to multiply and/or divide dimensioned quantities.</li> <li>iii) Half of the tasks require students to correctly express the units of the result.</li> <li>iv) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.</li> </ul>	MP.2 MP.5 MP.6 MP.7 MP.8	Yes
A	6.NS.1-2	Solve word problems involving division of fractions by fractions, <i>For example, How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?</i>	<ul style="list-style-type: none"> <li>i) Only the answer is required. For the explanations and representations aspect of 6.NS.1-2, see 6.C.2 and 6.C.3.</li> <li>ii) Note that the italicized examples correspond to three meanings/uses of division: (1) equal sharing; (2) measurement; (3) unknown factor. These meanings/uses of division should be sampled equally.</li> <li>iii) Tasks may involve fractions and mixed numbers but not decimals.</li> </ul>	MP.4	No
B	6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.	<ul style="list-style-type: none"> <li>i) The given dividend and divisor require an efficient/standard algorithm (e.g., <math>40584 \div 76</math>).</li> <li>ii) Tasks do not have a context.</li> <li>iii) Only the answer is required.</li> <li>iv) Tasks have a maximum of five-digit dividends and a maximum of two-digit divisors.</li> <li>v) Tasks may or may not have a remainder. Students understand that remainders can be written as fractions or decimals.</li> </ul>	-	No
B	6.NS.3-1	Fluently add multi-digit decimals using the standard algorithm.	<ul style="list-style-type: none"> <li>i) Tasks do not have a context.</li> <li>ii) Only the sum is required</li> <li>iii) The given addends require an efficient/standard algorithm (e.g., <math>72.63 + 4.875</math>).</li> <li>iv) Each addend is greater than or equal to 0.001 and less than or equal to 99.999.</li> </ul>	-	No
B	6.NS.3-2	Fluently subtract multi-digit decimals using the standard algorithm.	<ul style="list-style-type: none"> <li>i) Tasks do not have a context.</li> <li>ii) Only the difference is required.</li> <li>iii) The given subtrahend and minuend require an efficient/standard algorithm (e.g., <math>177.3 - 72.635</math>).</li> <li>iv) The subtrahend and minuend are each greater than or equal to 0.001 and less than or equal to 99.999. Positive differences only.</li> </ul>	-	No

## Grade 6 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	6.NS.3-3	Fluently multiply multi-digit decimals using the standard algorithm.	i) Tasks do not have a context. ii) Only the product is required. iii) The given factors require an efficient/standard algorithm (e.g., $72.3 \times 4.8$ ). iv) For purposes of assessment, the possibilities are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x 4-digit, or 2-digit x 5-digit.	-	No
B	6.NS.3-4	Fluently divide multi-digit decimals using the standard algorithm.	i) Tasks do not have a context. ii) Only the quotient is required. iii) The given dividend and divisor require an efficient/standard algorithm (e.g., $177.3 \div 0.36$ ). iv) Tasks are either 4-digit $\div$ 2-digit or 3-digit $\div$ 3-digit. (For example, $14.28 \div 0.68$ or $2.39 \div 0.684$ ). v) Every quotient is a whole number or a decimal terminating at the tenths, hundredths, or thousandths place.	-	No
B	6.NS.4-1	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.	i) Tasks do not have a context.	-	No
B	6.NS.4-2	Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. <i>For example, express <math>36 + 8</math> as <math>4(9 + 2)</math>.</i>	i) Tasks do not have a context. ii) Tasks require writing or finding the equivalent expression with the greatest common factor.	MP.7	No
A	6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	i) Tasks do not require students to perform any computations. ii) Students may be asked to recognize the meaning of 0 in the situation, but will not be asked to explain.	MP.2 MP.5	No
A	6.NS.6a	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.  a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$ , and that 0 is its own opposite.	i) Tasks have “thin context” <sup>2</sup> or no context.	MP.5 MP.8	No

## Grade 6 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	6.NS.6b-1	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane.	<ul style="list-style-type: none"> <li>i) Tasks have “thin context” or no context.</li> <li>ii) Students need not recognize or use traditional notation for quadrants (such as I, II, III, IV).</li> <li>iii) Coordinates are not limited to integers.</li> </ul>	MP.5	No
A	6.NS.6b-2	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. b. Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes	<ul style="list-style-type: none"> <li>i) Tasks have “thin context” or no context.</li> <li>ii) Students need not recognize or use traditional notation for quadrants (such as I, II, III, IV).</li> <li>iii) Coordinates are not limited to integers.</li> </ul>	MP.5 MP.8	No
A	6.NS.6c-1	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram	<ul style="list-style-type: none"> <li>i) Tasks have “thin context” or no context.</li> <li>ii) Coordinates are not limited to integers.</li> </ul>	MP.5	No
A	6.NS.6c-2	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. c. Find and position pairs of integers and other rational numbers on a coordinate plane.	<ul style="list-style-type: none"> <li>i) Tasks have “thin context” or no context.</li> <li>ii) Students need not recognize or use traditional notation for quadrants (such as I, II, III, IV).</li> <li>iii) Coordinates are not limited to integers.</li> </ul>	MP.5	No
A	6.NS.7a	Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret <math>-3 &gt; -7</math> as a statement that <math>-3</math> is located to the right of <math>-7</math> on a number line oriented from left to right.</i>	<ul style="list-style-type: none"> <li>i) Tasks do not have a context.</li> <li>ii) Tasks are not limited to integers.</li> </ul>	MP.2 MP.5	No

## Grade 6 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	6.NS.7b	Understand ordering and absolute value of rational numbers. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write <math>-3^{\circ}\text{C} &gt; -7^{\circ}\text{C}</math> to express the fact that <math>-3^{\circ}\text{C}</math> is warmer than <math>-7^{\circ}\text{C}</math>.</i>	i) Tasks are not limited to integers. ii) For the explain aspect of 6.NS.7b, see 6.C.4.	MP.2 MP.3 MP.5	No
A	6.NS.7c-1	Understand ordering and absolute value of rational numbers. c. Understand the absolute value of a rational number as its distance from 0 on the number line.	i) Tasks do not have a context. ii) Tasks are not limited to integers.	MP.2 MP.5	No
A	6.NS.7c-2	Understand ordering and absolute value of rational numbers. c. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. <i>For example, for an account balance of <math>-30</math> dollars, write <math> -30  = 30</math> to describe the size of the debt in dollars.</i>	i) Tasks have a context. ii) Tasks are not limited to integers.	MP.2	No
A	6.NS.7d	Understand ordering and absolute value of rational numbers. d. Distinguish comparisons of absolute value from statements about order. <i>For example, recognize that an account balance less than <math>-30</math> dollars represents a debt greater than 30 dollars.</i>	i) Tasks may or may not contain context. ii) Tasks are not limited to integers. iii) Prompts do not present students with a number line diagram, but students may draw a number line diagram as a strategy.	MP.2 MP.5	No
A	6.NS.8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	i) Tasks may or may not contain context. ii) Finding distances is limited to points with integer coordinates.	MP.1 MP.2 MP.5	No

## Grade 6 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	6.EE.1-1	Write numerical expressions involving whole-number exponents.	<ul style="list-style-type: none"> <li>i) Tasks involve expressing <math>b</math>-fold products <math>a \cdot a \cdot \dots \cdot a</math> in the form <math>a^b</math>, where <math>a</math> and <math>b</math> are non-zero whole numbers</li> <li>ii) Tasks do not require use of the laws of exponents</li> </ul>	MP. 8	No
A	6.EE.1-2	Evaluate numerical expressions involving whole-number exponents.	<ul style="list-style-type: none"> <li>i) Tasks may involve simple fractions raised to small whole-number powers, e.g. <math>(1/2)^3</math>, <math>(2/3)^2</math>.</li> <li>ii) Tasks may involve nonnegative decimals raised to whole-number powers.</li> <li>iii) Tasks do not have a context.</li> </ul>	MP.8	Yes
A	6.EE.2a	Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation "Subtract <math>y</math> from 5" as <math>5 - y</math>.</i>	<ul style="list-style-type: none"> <li>i) Tasks do not have a context.</li> <li>ii) Numerical values in these expressions may include whole numbers, fractions, and decimals.</li> </ul>	MP.8	Yes
A	6.EE.2b	Write, read, and evaluate expressions in which letters stand for numbers. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. <i>For example, describe the expression <math>2(8 + 7)</math> as a product of two factors; view <math>(8 + 7)</math> as both a single entity and a sum of two terms.</i>	<ul style="list-style-type: none"> <li>i) Tasks do not have a context.</li> <li>ii) Numerical values in these expressions may include whole numbers, fractions, and decimals.</li> </ul>	MP.7	Yes
A	6.EE.2c-1	Write, read, and evaluate expressions in which letters stand for numbers. c. Evaluate expressions at specific values of their variables. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	<ul style="list-style-type: none"> <li>i) Tasks do not have a context.</li> <li>ii) Numerical values in these expressions may include whole numbers, fractions, and decimals.</li> <li>iii) Task will not require operations on negative numbers.</li> </ul>	MP.7	Yes
A	6.EE.2c-2	Write, read, and evaluate expressions in which letters stand for numbers. c. Evaluate expressions that arise from formulas used in real-world problems at specific values of their variables. <i>For example, use the formulas <math>V = s^3</math> and <math>A = 6s^2</math> to find the volume and surface area of a cube with sides of length <math>s = 1/2</math>.</i>	<ul style="list-style-type: none"> <li>i) Tasks are simple applications of formulas that are provided in the prompt.</li> <li>ii) Tasks do not require the student to manipulate the formula or isolate variables to solve an equation.</li> <li>iii) Tasks have "thin context" or no context.</li> <li>iv) Numerical values in these expressions may include whole numbers, fractions, and decimals.</li> <li>v) Task will not require operations on negative numbers.</li> </ul>	MP.7	Yes

## Grade 6 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	6.EE.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). <i>For example, the expressions <math>y + y + y</math> and <math>3y</math> are equivalent because they name the same number regardless of which number <math>y</math> stands for.</i>	-	MP.7	No
A	6.EE.5-1	Understand solving an equation as a process of answering a question: which values from a specified set, if any, make the equation true?	-	MP.5 MP.6	Yes
A	6.EE.5-2	Use substitution to determine whether a given number in a specified set makes an inequality true.	i) Most of tasks involve values from an infinite set of nonnegative numbers (e.g., even numbers; whole numbers; fractions). Some tasks involve values from a finite set of nonnegative numbers (e.g., {2, 5, 7, 9}).	MP.5 MP.6	Yes
A	6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	i) Tasks may require students to write an expression to represent a real-world or mathematical problem. Tasks do not require students to find a solution. ii) Tasks may require students to interpret a variable as a specific unknown number, or, as a number that could represent any number in a specified set.	MP.2 MP.6 MP.7	No
A	6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which $p$ , $q$ and $x$ are all nonnegative rational numbers.	i) Tasks are algebraic, not arithmetic. See <a href="#">Progression for Expressions and Equations</a> , pp. 3,4. ii) Half of the tasks involve whole-number values of $p$ and $q$ ; and half of the tasks involve fraction or decimal values of $p$ and $q$ . iii) Fractions and decimals should not appear together in the same problem. iv) These tasks only involve equations with addition and multiplication. v) A valid equation and the correct answer are both required for full credit.	MP.1 MP.2 MP.6 MP.7	Yes
A	6.EE.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	i) Values of $c$ are not limited to integers. ii) Tasks involve $<$ and $>$ , not $\leq$ and $\geq$ .	MP.2 MP.6 MP.7	No

## Grade 6 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	6.EE.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. <i>For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation <math>d = 65t</math> to represent the relationship between distance and time.</i>	i) Tasks that involve writing an equation should not go beyond the equation types described in 6.EE.7 ( $x+p=q$ and $px=q$ where $p$ , $q$ , and $x$ are all nonnegative rational numbers).	MP.2 MP.4 MP.6 MP.8	Yes
B	6.G.1	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	-	MP.1 MP.2 MP.5 MP.7	Yes
B	6.G.2-1	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism.	i) Tasks do not have a context. ii) Tasks require focusing on the connection between packing the solid figure and computing the volume.	MP.2	No
B	6.G.2-2	Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	i) Tasks focus on using the formulas in problem-solving contexts.	MP.1 MP.4 MP.5	Yes
B	6.G.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	-	MP.1 MP.5	Yes
B	6.G.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	-	MP.1 MP.4 MP.5	Yes



## Grade 6 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	6.SP.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. <i>For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.</i>	i) Tasks do not assess mode and range.	-	No
B	6.SP.2	Understand that a set of data collected to answer a statistical question has a distribution, which can be described by its center, spread, and overall shape.	i) Tasks might present several distributions graphically and ask which two have nearly the same center, nearly the same spread, or nearly the same overall shape. ii) Tasks do not assess mode and range.	MP.4	No
B	6.SP.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	i) Tasks might ask students to rate statements True/False/Not Enough Information, such as, “The average height of trees in Watson Park is 65 feet. Are there any trees in Watson Park taller than 65 feet?” ii) Tasks do not assess mode and range.	MP.4	No
B	6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	i) Tasks ask students to identify which display corresponds to a given set of data. ii) Tasks do not assess mode and range.	MP.2 MP.5	No
B	6.SP.5	Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	i) Tasks have a text-based and a graphics-based overview of a numerical data set. ii) Tasks require students to identify/select from unambiguously true or false statements such as, “About half of the values are greater than the average”; “If this point were deleted from the data set, the median would not change”; etc. iii) Tasks do not assess mode and range.	MP.4	Yes
B	6.Int.1	Solve two-step word problems requiring operations on multi-digit whole numbers or decimals.	i) Operations are no more complex than those specified for 6.NS.2, 6.NS.3-1, 6.NS.3-2, 6.NS.3-3, and 6.NS.3-4 with the exception of 3-digit x 3-digit. ii) For purposes of assessment, the possibilities for multiplication are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x 4-digit, 2-digit x 5-digit, or 3-digit x 3-digit (For example, 7.68 x 15.3 or 0.35 x 18.241.)	MP.1	No

## Grade 6 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
C	6.C.1.1	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 6.EE.3, 6.EE.4	i) Tasks should not require students to identify or name properties	MP.3 MP.6 MP.7	Yes
C	6.C.2	Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 6.NS.1	-	MP.2 MP.3 MP.4 MP.6	Yes
C	6.C.3	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 6.NS.1	-	MP.2 MP.3 MP.4 MP.5 MP.6	Yes
C	6.C.4	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 6.NS.6, 6.NS.7	-	MP.3 MP.5 MP.6	Yes
C	6.C.5	Base explanations/reasoning on a coordinate plane diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 6.NS.6, 6.NS.8	-	MP.3 MP.4 MP.5 MP.6	Yes
C	6.C.6	Given an equation, present the solution steps as a logical argument that concludes with a solution. Content Scope: Knowledge and skills articulated in 6.EE.B	i) Tasks do not require students to write an equation or inequality.	MP.3 MP.6	Yes
C	6.C.7	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 6.EE.4	-	MP.3 MP.6	Yes
C	6.C.8.1	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 6.RP.A	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.3 MP.6	Yes

## Grade 6 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
C	6.C.8.2	<p>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 <math>1 + 4 = 5 + 7 = 12</math>, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions.</p> <p>Content Scope: Knowledge and skills articulated in 6.EE.9</p>	<p>i) Tasks that involve writing an equation should not go beyond the equation types described in 6.EE.7 (<math>x+p=q</math> and <math>px=q</math> where <math>p</math>, <math>q</math>, and <math>x</math> are all nonnegative rational numbers).</p>	<p>MP.2 MP.3 MP.6</p>	Yes
C	6.C.9	<p>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.)</p> <p>Content Scope: Knowledge and skills articulated in 5.NBT, 5.MD.C.</p>	<p>i) Tasks may have scaffolding<sup>1</sup>, if necessary, in order to yield a degree of difficulty appropriate to Grade 6.</p>	<p>MP.3 MP.6</p>	Yes

## Grade 6 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
D	6.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 6, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding, if necessary, in order yield a degree of difficulty appropriate to Grade 6.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	6.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to Grade 6, requiring application of knowledge and skills articulated in 5.NBT.B, 5.NF, 5.MD, and 5.G.A.	i) Tasks may have scaffolding, if necessary, in order yield a degree of difficulty appropriate to Grade 6.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	6.D.3	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) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 6.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes

<sup>1</sup> 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.

<sup>2</sup> “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 6 Assessment Policies

## Calculators:

- PARCC mathematics assessments allow a four-function calculator with square root and percentage functions in Grade 6.
- 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:

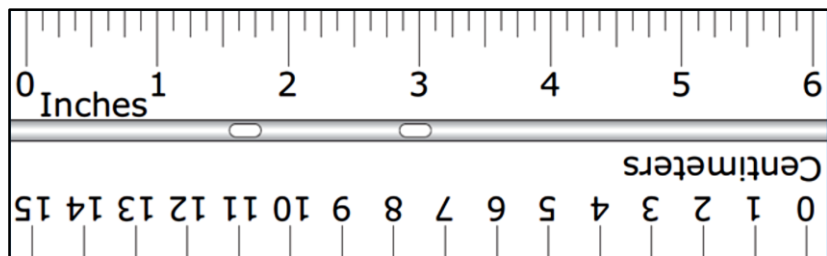
- No calculators with Computer Algebra System (CAS) features are allowed.
- No tablet, laptop (or PDA), or phone-based calculators are allowed during PARCC assessments.
- Students are not allowed to share calculators within a testing session.
- Test administrators must confirm that memory on all calculators 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 and Protractors:

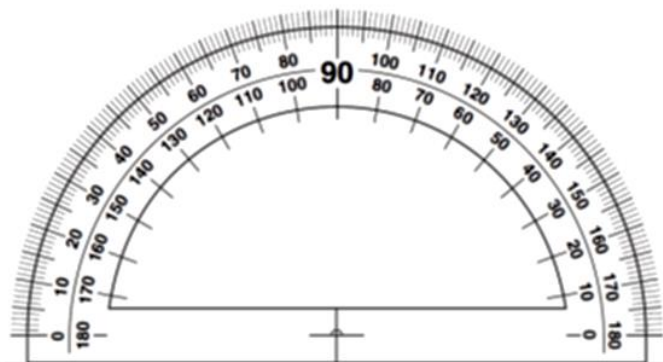
- Rulers are used on the Grade 6 PARCC Assessments.
- For computer-based assessments, the grade-appropriate ruler and protractor is provided through the computer-based platform.
- For paper-based assessments, rulers and protractors are included in the PARCC-provided materials that are shipped to schools/districts.
- Schools are **not** allowed to provide their own rulers and protractors for Grade 6 PARCC assessments.

To practice with the computer-based rulers and protractors, please visit the PARCC Practice Test at <http://practice.parcc.testnav.com/>.

Grade 6 ruler provided on the PARCC paper-based mathematics assessments (not actual size):



Grade 6 protractor 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.

## Mathematics Reference Sheet:

- Students in grade 6 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 grades 6 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 6

#### Reference Sheet

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
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
		1 liter = 0.264 gallons
		1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Rectangular Prism	$V = Bh$ or $V = lwh$

- Students in grade 6 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 6 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 6 is to have a conceptual understanding of area of rectangles.

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