

# Louisiana Guide to PARCC Mathematics Assessments

## Grades 3-5

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### I. Purpose of Assessment Guide

This document is designed to assist Louisiana educators in understanding the PARCC assessments for grades 3-5 which will be implemented beginning in Spring 2015. **It will continue to be updated as decisions are made by the PARCC consortium with a more detailed version available in Summer 2014.**

### II. Introduction to PARCC

In grades 3-8 for English language arts (ELA) and mathematics, Louisiana has chosen to adopt the assessments developed by The Partnership for Assessment of Readiness for College and Careers (PARCC). PARCC is a consortium of 18 states working together to develop ELA and mathematics assessments. The design of the PARCC assessment system is driven by the following priorities:

- Determine whether students are college- and career-ready or on track
- Assess the full range of the Common Core State Standards (CCSS), including standards that are difficult to measure
- Measure the full range of student performance, including the performance of high- and low-performing students
- Provide data during the academic year to inform instruction, interventions and professional development
- Provide data for accountability, including measures of growth
- Incorporate innovative approaches throughout the assessment system

Louisiana has been a member of the PARCC consortium since its inception. As a result, many Louisiana educators at the school, district, state, and college/university levels have and are continuing to serve on various committees. These include, but are not limited to, the development of PARCC's policies and procedures and PARCC's extensive review of assessment tasks that will be taken by Louisiana's students.

### III. PARCC Summative Assessments

All local education agencies (LEAs) in Louisiana will administer PARCC’s two summative assessments described below:

The **Performance-Based Assessment (PBA)** is administered after approximately 75% of the school year. While some tasks will be computer-scored, 68% of the assessment for each grade 3-5 will require students to solve real-life problems and to provide reasoning/explanations to support their work.

The **End-of-Year Assessment (EOY)** is administered after approximately 90% of the school year. In the mathematics End-of-Year Assessment, students will demonstrate their ability to understand and use skills identified as [Major, Supporting and Additional content](#) of the grade including mathematical fluency. To be able to provide results quickly, this assessment will have computer-scored tasks only.

These assessments are the focus of this guide. Additional information on the exact content of each assessment can be found in PARCC’s Evidence Statements. [Section VI](#) of this guide provides additional information on Evidence Statements.

### IV. Overview of PARCC Mathematics Task Types and Reporting Categories

Each item on the PARCC assessment is referred to as a task and is identified by one of three types: Type I, Type II, and Type III. As shown in the graphic below, each of the three task types is aligned to one of five reporting categories (major content, additional and supporting content, fluency, reasoning, and modeling). The reporting categories are also called sub-claims. Each task type is designed to align with at least one of the [Standards for Mathematical Practice](#) (MP). For each task type, the table provides the method for scoring the task and shows which assessments include the task type.

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

Samples of each task type are provided beginning on [page 9](#) in this document. Additional samples are available in pdf format at <http://www.parcconline.org/samples/math> and in interactive format at <http://practice.parcctestnav.com/#>.

## V. Design of PARCC’s Summative Assessments for Grades 3-5

Each of PARCC’s summative mathematics assessments in grades 3-5 has a total of 82 points. The Phase I – Performance-Based Assessment has 38 points and Phase II – End-of-Year Assessment has 44 points. Student results on the Performance-Based Assessment will be combined with results on the End-of-Year Assessment to produce an overall mathematics score.

The table below shows the breakdown of task types and point values on PARCC’s mathematics Performance-Based Assessment for grades 3, 4, and 5. The total number of tasks (blue), total number of points (green), and the percentage of the total points on the assessment that each type represents (light blue) are included.

Performance-Based Summative Assessment Grades 3, 4, 5			
	Task Type/Point Value	Number of Tasks	Total Points
Number and Point Values for each Task Type	Type I 1 Point	8	8
	Type I 2 Point	2	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>17</b>	<b>38</b>
Percentage of Assessment Points by Task Type	Type I	(12/38) 32%	
	Type II	(14/38) 36%	
	Type III	(12/38) 32%	

The tables below show the total number of tasks (green), total number of points (medium blue), and the percentage of the total points on the assessment that each type represents (light blue) on PARCC's mathematics End-of-Year Assessment for each grade 3-5. The number of tasks is fewer in grades 4 and 5; however, the increased number of 2-point tasks makes the total number of points on the End-of-Year Assessment the same in each grade 3-5.

End-of-Year Summative Assessment Grades 3			
Task Type/ Point Value	Number of Tasks	Total Points	Percent of Test
Type I 1 Point	34	34	77%
Type I 2 Point	5	10	23%
Totals	39	44	100%

End-of-Year Summative Assessment Grades 4 and 5			
Task Type/ Point Value	Number of Tasks	Total Points	Percent of Test
Type I 1 Point	28	28	64%
Type I 2 Point	8	16	36%
Totals	36	44	100%

## VI. Evidence Statements

To assist teachers in understanding how the Common Core content and mathematical practice standards will be assessed, PARCC has released Evidence Statements for each grade. Evidence Statements are descriptions of student work and are used by writers to guide their development of assessment tasks. Evidence Statements describe what within a student's work indicates that the student has mastered a specific standard. The clarifications provide additional information (such as limitations on numbers or whether the task is to be a word problem) to ensure consistency across tasks written for the same Evidence Statement. One row from the Grade 3, End-of-Year Assessment Evidence Statement table is shown below. The information highlighted in blue is not part of the Evidence Statement, but explains the purpose or provides additional information for each column.

Evidence Statement Key	Evidence Statement Text	Clarifications	Math Practice(s)
4.NF.1-2  Connects an Evidence Statement to a content standard (CCSS) or a task type.	Use the principle $\frac{a}{b} = \frac{(n \times a)}{(n \times b)}$ to recognize and generate equivalent fractions.  Description of what the task will require students to do.	i) The explanation aspect of 4.NF.1 is not assessed here. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iii) Tasks may include fractions that equal whole numbers.  Clarification (i): Tasks will not require students to explain. Clarifications (ii) & (iii): Provide limits on fractions used in tasks.	7  Not all Evidence Statements are aligned to a MP. If multiple practices are listed, each task need <u>not</u> address all listed.

As an example of how a teacher might use Evidence Statements, let's assume that a teacher has written the following task to include on a unit assessment. The teacher indicates the task is aligned to Evidence Statement 3.OA.4 which is provided below the task.

*Johnny has 8 crayons. He wants to give an equal number of crayons to each of his 4 friends. He wrote the equation  $4 \times ? = 8$  to find the number of crayons he should give to each friend. How many crayons should Johnny give to each friend?*

**Based on the information in Evidence Statement 3.OA.4, would this be considered a PARCC-like task?**

Evidence Statement Key	Evidence Statement Text	Clarifications	Math Practice(s)
3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations <math>8 \times ? = 48</math>, <math>5 = w \div 3</math>, <math>6 \times 6 = ?</math>.</i>	i) Tasks do not have a context. ii) Only the answer is required (methods, representations, etc. are not assessed here). iii) All products and related quotients are from the harder three quadrants of the times table ( $a \times b$ where $a > 5$ and/or $b > 5$ ).	-

The answer is “no.” Clarification (i) indicates that problems with context are not to be used when writing tasks for Evidence Statement 3.OA.4. Since this is a real-life application presented in the form of a word problem, the task does not meet this clarification. This limitation occurs because all End-of-Year Assessment tasks are Type I tasks and must be computer scored. The task should be simple and straight forward, such as “Find the missing number:  $4 \times ? = 8$ .” Additionally, the task does not meet the content limits of clarification (iii) as 4 and 2 are both less than 5.

Links to each set of Evidence Statements are provided below. Additional guidance and training on how to use the Evidence Statements will be available throughout Spring and Summer 2014.

<a href="#">Grade 3 PBA Evidence Statements</a>	<a href="#">Grade 3 EOY Evidence Statements</a>
<a href="#">Grade 4 PBA Evidence Statements</a>	<a href="#">Grade 4 EOY Evidence Statements</a>
<a href="#">Grade 5 PBA Evidence Statements</a>	<a href="#">Grade 5 EOY Evidence Statements</a>

## VII. PARCC Policies Affecting Test Administration

### Testing Format and Administration for Mathematics Summative Assessments

In Louisiana, our goal is for all PARCC assessments to be taken online by 2015-16. Given feedback from educators around the state, Louisiana will make a gradual transition to online testing.

To support a gradual transition, in 2015 students will take the:

- 3<sup>rd</sup> grade PARCC assessments in **paper and pencil** form (LEAs/schools may administer online, if ready)
- 4<sup>th</sup> grade PARCC assessments in **paper and pencil** form (LEAs/schools may administer online, if ready)
- 5<sup>th</sup> grade PARCC assessments **on computers** (LEAs can apply for a waiver to administer the assessment in paper and pencil form)

The table that follows provides a breakdown of the testing sessions by grade level, including an estimate of the amount of time the typical student will need to complete each session. These estimates may be refined based on the results of the field tests and are summarized from PARCC’s [Assessment Administration Guidance](#).

Component	Format and Administration
<b>Performance-Based Assessment (PBA)</b>  Hand- and Computer- Scored Items	<b>Format</b> Approximately 75% of the way through the school year 2 mathematics sessions (50 minutes/session)  <b>Administration</b> 20 day testing window for Computer Based Tests (CBT): March 2-27, 2015 5 day testing window for Paper Based Tests (PBT): March 16-20, 2015
<b>End-of-Year Assessment (EOY)</b>  Computer-Scored Items Only	<b>Format</b> Approximately 90% of the way through the school year 2 mathematics sessions (55 minutes/session)  <b>Administration</b> 20 day testing window for Computer Based Tests (CBT): April 27-May 22, 2015 5 day testing window for Paper Based Tests (PBT): May 4-8, 2015

For 2015 only, results will not be available until early Fall. Therefore, no summer retests will be offered for Summer 2015.

While it is anticipated that most students will complete the test sessions within these estimated times, all participating students will have a set amount of additional time for each session to provide them with ample time to demonstrate their knowledge. Students with disabilities who have a documented (e.g., IEP) extended time accommodation will be given time beyond the set additional time

### Calculators

With the exception of students who have a documented (e.g., IEP) assistive technology accommodation, **students are not allowed to use calculators during the administration of any mathematics test in grades 3 -5.**

### Reference Sheets

Students in grades 3 and 4 will **not** have a reference sheet because the Common Core State Standards for Mathematics for these grades do not require one. Students in grade 5 will be allowed to use the reference sheet posted at [http://www.parcconline.org/sites/parcc/files/ApprovedPARCCReferenceSheet\\_081712.pdf](http://www.parcconline.org/sites/parcc/files/ApprovedPARCCReferenceSheet_081712.pdf). A copy of the information is provided on the next page.



### Assessment Reference Sheet

#### Grades 5

1 mile = 5,280 feet  
1 mile = 1,760 yards

1 pound = 16 ounces  
1 ton = 2,000 pounds

1 cup = 8 fluid ounces  
1 pint = 2 cups  
1 quart = 2 pints  
1 gallon = 4 quarts  
1 liter = 1000 cubic centimeters

Right Rectangular Prism	$V = Bh$ or $V = lwh$
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### Other Permitted Testing Materials

Students will be permitted to have school-issued scratch paper. All scratch paper is to be collected by the test administrator at the conclusion of testing each day. The test administration manuals will provide more specific information needed to administer the assessments.

### 2015 Pencil-and-Paper Tests for Grades 3 and 4

Students in grade 3 will enter answers in their test booklets. Students in grade 4 will enter answers on a separate answer document. An excerpt from an answer document for Type I tasks is provided below. Space will be provided for students to write explanations and/or to show their work for Type II and Type III tasks.

1 point → **2.**   B  C  D  
Multiple Choice

1 point → **3.**  A    D  E  F  
Multiple Select

2 point task → **4.** **Part A**  
  B  C  D

Part A: Multiple Select

Part B:  
Student works problem, enters answer only by shading one numeral, a fraction bar, or a decimal point in a column.  
Answer shaded is 2.4.

	2	.	4		
	7	7	7	7	7
	•	•	•	•	•
	0	0	0	0	0
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9

**5. Part A** ← 2 point task  
 A   C  D  
**Part B**  
Both parts are Multiple Choice.

A  B  C

**6.**

	9	/	5		
	•	•	•	•	•
	0	0	0	0	0
	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8
	9	9	9	9	9

 1 point task  
Student works problem, enters answer only by shading one numeral, a fraction bar, or a decimal point in a column.  
Answer coded is 9/5.

The answers in Tasks 4b and 6 above are shaded starting with the left column. Students also have the option of shading with the information being right-justified as shown below.

**4. Part B**

			2	.	4
	/	/	/	/	
•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	•	2	2
3	3	3	3	3	3
4	4	4	4	4	•
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

**6.**

			9	/	5
	/	/	/	•	
•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	•
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	•	9	9	9

### VIII. Student Technology Skills

Students taking the PARCC online assessments have an opportunity to practice using the computer tools provided in PARCC’s online testing system. These tools include both the enhanced-technology and accessibility features available to all students. PARCC has developed a Tutorial and Sample Tasks for the purpose of learning how to use these tools. Both are accessible <http://practice.parcc.testnav.com/#>.

The computer operating system and web browser requirements for viewing the online Tutorial and Sample Tasks are the same as those for the general online testing system. For a complete set list of supported systems, see [http://www.pearsononlinetesting.com/TestNav/8/requirements\\_testnav\\_8\\_0\\_4.html](http://www.pearsononlinetesting.com/TestNav/8/requirements_testnav_8_0_4.html). Check with your district technology coordinator for questions regarding equipment compatibility issues.

#### Technology-Enhanced Item Types in Online Assessments

Both the online Performance-Based Assessment and End-of-Year Assessment will have computer-scored Type I tasks. Students will use computer-based enhancements such as:

- select (multiple choice)
- multiple select
- inline choices (drop down menus)
- drag-and-drop
- fill-in-the-blank
- hotspots
- combination equation builder and text editor

The following examples are screenshots of computer-based enhancements taken from online samples provided by PARCC.

**Select (multiple choice):** Students choose only one correct answer. The multiple select format is similar, but allows for choosing more than one correct answer.

What does  $18 + 22$  equal?

- A. 40
- B. 18
- C. 0
- D. 52

**Inline Choice (drop down menus):** Students select correct responses from a drop-down menu to complete mathematical or verbal statements.

For a school field trip, 72 students will be traveling in 9 vans. Each van will hold an equal number of students. The equation shows a way to determine the number of students that will be in each van.

$$72 \div 9 = ?$$

The given equation can be rewritten using a different operation.

Use the drop-down menus to select the operation and the numbers to complete the equation.

= 72

**Drag-and-drop:** Students select and move information to provide correct responses.

Baseball stadiums have different numbers of seats. Drag the tiles to arrange the stadiums from least to greatest number of seats.

San Francisco Giants' stadium: 41,915 seats	Washington Nationals' stadium: 41,888 seats	San Diego Padres' stadium: 42,445 seats
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< 
  <

**Fill-in-the-blank:** Students provide a short, usually numeric, response in a provided box.

Patricia needs to read for 120 minutes each week.

- She read for 26 minutes on Monday.
- She read for 39 minutes on Tuesday.
- She read for 38 minutes on Thursday.

How many more minutes does Patricia need to read this week?

Enter your answer in the box.

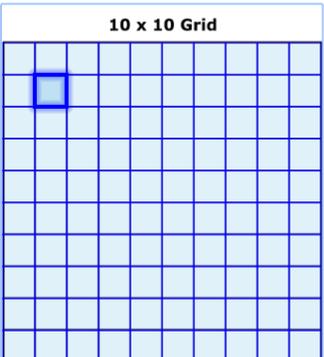
minutes

**Hotspots:** Students provide correct responses by selecting an object such as a point on a number line, squares to show an array, or a point on a coordinate plane.

The grid shows how much wall space the art teacher can use. Use the grid to create a rectangular array showing how the art teacher might arrange the tiles on the wall.

Select the boxes to shade them. Each tile should be shown by one shaded box.

**10 x 10 Grid**



**Grades 3-5 Equation and Text Editor:** Students use this tool in conjunction with the keyboard to provide detailed explanations or to show problem-solving methods used in Type II and Type III tasks. This tool will also be used in Type I tasks when entering fractions and mixed number responses.

How many beads did Damian and Trish each receive? Show or explain how you arrived at each answer.

## IX. Grade-Level Examples of PARCC Tasks

On the next few pages are Sample Tasks released by PARCC and designed to help educators understand each task type. At least one sample of each task type is provided from the grade span 3-5. The samples presented in this document differ slightly from those posted on the PARCC website. The blank spaces allotted for students to enter their responses have been removed so that each Sample Task will fit on a single page. The original versions of these and other Sample Tasks, along with annotations and rubrics, are available in pdf format at <http://www.parcconline.org/samples/math>.

PARCC has released an online Tutorial and Sample Tasks. Both the tutorial and the digital versions of some of the Sample Tasks shown below are available at <http://practice.parcctestnav.com/#>. Technology requirements for using the online testing system can be found at [http://www.pearsononlinetesting.com/TestNav/8/requirements\\_testnav\\_8\\_0\\_4.html](http://www.pearsononlinetesting.com/TestNav/8/requirements_testnav_8_0_4.html).

## Grade 3 - Type I – 1 point

Click on all the equations that are true.

- $8 \times 9 = 81$
- $54 \div 9 = 24 \div 6$
- $7 \times 5 = 25$
- $8 \times 3 = 4 \times 6$
- $49 \div 7 = 56 \div 8$

Grade 3	Fluency
Type	Type I, Claim A & E
Most relevant Standard(s) for Mathematical Content	3.OA.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
Most relevant Standard(s) for Mathematical Practice	MP.7 (Look for and make use of structure) - the true equations in the list show two different ways of writing the same number. This circumstance can be useful in checking work on this problem.

Evidence statement clarifications indicate that

- i) Tasks do not have a context.
- ii) Only the answer is required (strategies, representations, etc., are not assessed here).
- iii) Tasks require fluent (fast and accurate) finding of products and related quotients. For example, each one-point task might require four or more computations, two or more multiplication and two or more division.
- iv) 75% of tasks are from the harder three quadrants of the times table (i.e., both factors are greater than or equal to 5).

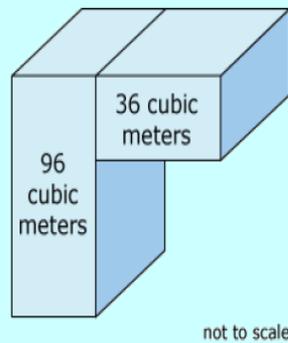
This is a fluency task reflecting major content. The student must select the last two answer options as being correct and leave the others unmarked to receive 1 point.

Type I tasks are machined scored. Such tasks would be timed if part of the online test.

This task may be accessed in pdf format at [http://www.parcconline.org/sites/parcc/files/PARCC Math Sample Problems GR3FluencyV2.pdf](http://www.parcconline.org/sites/parcc/files/PARCC_Math_Sample_Problems_GR3FluencyV2.pdf).

**Grade 5 - Type I – 2 points**

A large tank at the state aquarium is shown. There are two rectangular prisms which form the large tank.



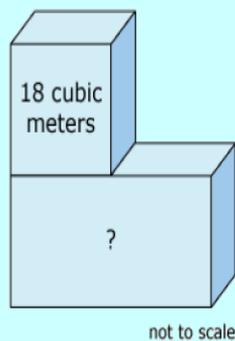
Part A

What is the volume of the large tank?

cubic meters

Part B

The scientists are creating a second large tank that is also made from two rectangular prisms. The second tank has the same volume as the first tank.



What is the volume of the rectangular prism on the bottom?

cubic meters

Grade 5	Two Aquarium Tanks
Type	Type I - 2 points
Evidence Statement	<p><b>5.MD.5c:</b> Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.</p> <p><b>Clarification:</b> i) Tasks require students to solve a contextual problem by applying the indicated concepts and skills.</p>
Most Relevant Standards for Mathematical Content	<p><b>5.MD.5:</b> Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.</p> <p>This standard is major content in the grade based on the PARCC Model Content Frameworks.</p>

This task addresses MP.4 (simple modeling) by asking students to solve a word problem. Students must demonstrate MP.7 (make use of structure) by combining the volumes of two rectangular prisms to find the total volume.

Scaffolding is accomplished by having students work through the solution using the standard steps of addition in Part A. Part B allows students to interact with the content at a higher cognitive level to solve for missing the value. Complexity is slightly increased by changing the orientation of the tank.

Students enter only the answers so that work can be electronically scored; however, having students enter their responses is considered more difficult as the entry method removes the students' ability to eliminate one or more of the multiple choice options and reduces the probability of guessing the correct answer.

Correct answers for Parts A and B are 132 and 114 cubic meters, respectively.

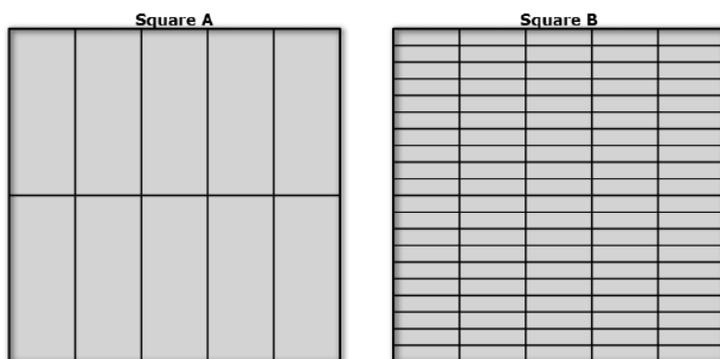
A student may receive one point on Part B with an incorrect answer in Part A.

This task may be accessed in pdf format at  
<http://www.parcconline.org/sites/parcc/files/Grade5-TwoAquariumTanks.pdf>.

**Grade 4 – Type II – 4 points**

In this task, you will compare the decimal representations of the fractions  $\frac{2}{10}$  and  $\frac{17}{100}$ .

Two grids, Square A and Square B, are shown. The squares are of equal size. Square A is divided into 10 rectangles of equal size. Square B is divided into 100 rectangles of equal size. You can shade the rectangles by clicking in them. You can use the grids to help with your explanation and comparison.



Part A

Write a fraction with a denominator of 100 that is equivalent to  $\frac{2}{10}$ . Use the grids to explain how you know that the fractions are equivalent.

Part B

Write  $\frac{2}{10}$  as a decimal. Then write  $\frac{17}{100}$  as a decimal. Explain how you can use the grids to compare the two decimals.

Undo Redo

Grade 4	Fraction Model
Item Type	Type II – 4 points
Evidence Statement	<p>4.C.4-5 with content scope 4.NF.C</p> <p><b>4.C.4-5:</b> 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.</p> <p>Content Scope: Knowledge and skills articulated in 4.NF.C</p> <p>Clarifications for 4.C.4-5:</p> <ul style="list-style-type: none"> <li>i) Tasks have “thin context” or no context.</li> <li>ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100 (CCSS footnote, p. 30).</li> </ul>
Most Relevant Standards for Mathematical Content	<p><b>4.NF.C:</b> Understand decimal notation for fractions, and compare decimal fractions.</p> <p><b>5.</b> Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express <math>\frac{3}{10}</math> as <math>\frac{30}{100}</math>, and add <math>\frac{3}{10} + \frac{4}{100} = \frac{34}{100}</math>.</p> <p><b>6.</b> Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as <math>\frac{62}{100}</math>; describe a length as 0.62 meters; locate 0.62 on a number line diagram.</p> <p><b>7.</b> Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions, e.g., by using a visual model.</p> <p>This standard is major content in the grade based on the PARCC Model Content Frameworks.</p>

Type II tasks expect students to construct viable arguments (MP.3) through precisely written mathematical statements (MP.6). Students may use the given area models to find the structure needed for the explanation (MP.7 and MP.5). Shading of the model is **not** scored; however, both Part A and Part B require that students use the grid in their explanations to show their understanding of equivalence of fractions.

#### Scoring Rubric

##### Part A

- 1 computation point for determining the equivalent fraction of  $20/100$
- 1 reasoning point for explaining why  $2/10$  is equivalent to  $20/100$  using the area model (e.g., When I shaded 2 of the 10 sections in in the first grid, those two sections made the same-sized rectangle as 20 sections in the grid with 100 sections. I then know that  $2/10$  is equal to  $20/100$ .)

##### Part B

- 1 computation point for determining the decimal form of each fraction (0.2 and 0.17)
- 1 reasoning point for providing correct reasoning for the comparison (e.g., using shading to show equivalent fractions and stating that equivalent fractions with denominator 100 can be rewritten as decimals with 2 places).
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This sample is available in pdf format at

[http://www.parcconline.org/sites/parcc/files/PARCC\\_SampleItems\\_Mathematics\\_G4FractionModel\\_081913\\_Final.pdf](http://www.parcconline.org/sites/parcc/files/PARCC_SampleItems_Mathematics_G4FractionModel_081913_Final.pdf).

**Grade 5 – Type III – 3 points**

Mr. Edmunds shared 12 pencils among his four sons as follows:

- Alan received  $\frac{1}{3}$  of the pencils.
- Bill received  $\frac{1}{4}$  of the pencils.
- Carl received more than 1 pencil.
- David received more pencils than Carl.

Part A

On the number line, represent the fraction of the total number of pencils that was given to both Alan and Bill combined. Use the buttons on the right to increase or decrease the number of equal sections on the number line.



Part B

What fraction of the total number of pencils did Carl and David each receive? Justify your answer.

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Grade 5	Mr. Edmund's Pencil Box
Item Type	Type III – 3 point
Evidence Statement	5.D.1 with content scope of 5.NF  5.D.1: Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in the Grade 5 PBA Evidence Statement Table.
Most Relevant Standards for Mathematical Content	5.NF.2: Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. <i>For example, recognize an incorrect result <math>\frac{2}{5} + \frac{1}{2} = \frac{3}{7}</math>, by observing that <math>\frac{3}{7} &lt; \frac{1}{2}</math>.</i>  5.NF.4a: Interpret the product $(\frac{a}{b}) \times q$ as $a$ parts of a partition of $q$ into $b$ equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ . <i>For example, use a visual fraction model to show <math>(\frac{2}{3}) \times 4 = \frac{8}{3}</math>, and create a story context for this equation. Do the same with <math>(\frac{2}{3}) \times (\frac{4}{5}) = \frac{8}{15}</math>. (In general, <math>(\frac{a}{b}) \times (\frac{c}{d}) = \frac{ac}{bd}</math>.)</i>  These standards are major content in the grade based on the PARCC Model Content Frameworks.

Students create a representation of the solution to an addition problem using a number line hotspot tool and may choose to use the representation to solve Part B (MP.5). The use of the hotspot tool in Part A allows the response to be electronically scored.

#### Scoring Rubric

##### Part A:

- 1 point for correctly representing the fraction  $\frac{7}{12}$  on the number line.

##### Part B:

- 1 point for determining the number of pencils received by each person ( $\frac{1}{3}$  of 12 is 4 so Allen got 4 pencils.  $\frac{1}{4}$  of 12 is 3, so Bill got 3 pencils. There were 5 pencils remaining. If David got 1 more than Carl and Carl has to have more than one pencil, then Carl gets 2 pencils and David gets 3.)
- 1 point for interpreting the results as fractions (There were 12 total pencils and Carl got 2 of them, so Carl got  $\frac{2}{12}$  of the pencils. David got 3 out of 12 or  $\frac{3}{12}$  of the pencils).

Students are **not** penalized for not writing fractions in lowest terms.

If students indicate how they found the fraction on the number line for Part A in the box for Part B, that work will **not** be scored as the question does not request such information.

This task is available in pdf format at

[http://www.parcconline.org/sites/parcc/files/PARCC\\_SampleItems\\_Mathematics\\_G5PencilBox\\_082713\\_Final.pdf](http://www.parcconline.org/sites/parcc/files/PARCC_SampleItems_Mathematics_G5PencilBox_082713_Final.pdf).

## X. Glossary

**Claim:** A statement about student performance based on how students respond to test questions. PARCC tests are designed to elicit evidence from students that support valid and reliable claims about the extent to which they are college and career ready or on track toward that goal and are making expected academic gains based on the Common Core State Standards. To support such claims, PARCC assessments are designed to measure and report results in multiple categories called master claims and sub-claims.

**End of Year Assessment (EOY):** End-of-year assessments are administered after approximately 90 percent of the school year. The ELA/literacy EOY will focus on reading comprehension. The mathematics EOY will ask students to demonstrate solid understanding of mathematics concepts and demonstrate mathematical fluency.

**Evidence Statement:** Words or phrases that describe student work and support claims about students' mastery of particular standards. Evidence statements describe what one can point to in a student's work to show that the student has mastered a specific standard.

**Local Education Agency (LEA)** – An LEA is an agency or other organization responsible for administrative control or direction of a school.

**Partnership for Assessment of Readiness for College and Careers (PARCC):** PARCC is a consortium of 18 states working together to develop an assessment system for English language arts and mathematics anchored in what it takes to be ready for college and careers.

**Performance-Based Assessment (PBA):** For PARCC, the performance-based assessment will be administered approximately 75 percent of the way through the academic study of the grade or course content. Student results on the PBAs will be combined with their results on end-of-year assessments (EOYs) to produce overall PARCC scores in each content area. PBAs in mathematics will focus on reasoning and modeling and include questions that require both short and extended responses.

**Standards for Mathematical Practice:** The Standards for Mathematical Practice describe ways in which students ought to engage with mathematics through elementary, middle and high school. Examples of these practices include problem solving, procedural fluency and conceptual understanding.

**Standard Setting:** The process used to establish performance (achievement) level cut scores.

**Summative Assessment:** A summative assessment is designed to measure a student’s knowledge and skills at the end of an instructional period, such as an entire school year or at the conclusion of a course. The PARCC summative assessment will include two components — the performance-based assessment (PBA) component and the end-of-year assessment (EOY) component. The results of the two components will be combined to produce overall summative assessment results.

**Task:** In mathematics, a task is an operational item that may either have a single prompt or multiple prompts. The PARCC mathematics tests contain three types of tasks:

Type I tasks assess concepts, skills and procedures.

Type II tasks assess students’ ability to express mathematical reasoning.

Type III tasks assess modeling and applications.

**Technology-Enhanced Items (TEIs):** TEIs are tasks administered on a computer and take advantage of the computer-based environment to present situations and capture responses in ways that are not possible on a paper-based test.