LEAP Assessment Guide, Mathematics Grade 5

This guide includes:

I. Purpose of Assessment Guide

This document is designed to assist Louisiana educators in understanding the LEAP mathematics assessment for grade 5, which will be administered in spring 2016.

II. Introduction to LEAP

All students in grades 3–8 will take the LEAP ELA and mathematics assessments. In order for Louisiana to maintain comparability between assessments administered in spring 2015 and spring 2016, a percentage of the items (not more than 49.9%) for the LEAP assessments comes from the Partnership for Assessment of Readiness for College and Careers (PARCC). PARCC is a group of states working together to develop high-quality assessments. The remaining percentage of items for the LEAP assessments comes from the College and Career Readiness Item Bank belonging to Data Recognition Corporation, winner of the LEAP mathematics and ELA test development contract.

The LEAP assessments will offer the following:

- Consistency with the rigor and types of questions used in the spring 2015 Louisiana assessments
- Measurement of the full range of Louisiana content standards in ELA and mathematics
- Ability to measure the full range of student performance, including the performance of high- and low-performing students

- Flexibility in test administration, with both paper- and computer-based testing available
- Information for educators and parents about student readiness in ELA and mathematics and whether students are "on track" for college and careers
- Comparison of Louisiana student performance with the performance of students in other states

III. Overview of LEAP Mathematics Task Types and Reporting Categories

Each item on the LEAP 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 table below, each of the three task types is aligned to one of four reporting categories (also called sub-claims): major content, additional and supporting content, reasoning, and modeling. Each task type is designed to align with at least one of the Standards for Mathematical Practice (MP).

Task Type	Description	Sub-Claim	Mathematical Practice(s)
Type I	conceptual understanding, fluency, and application	**Sub-Claim A:** solve problems involving the major content for grade 5 **Sub-Claim B:** solve problems involving the additional and supporting content for grade 5	can involve any or all practices
Type II	written arguments/ justifications, critique of reasoning, or precision in mathematical statements	**Sub-Claim C:** express mathematical reasoning by constructing mathematical arguments and critiques	primarily MP.3 and MP.6, but may also involve any of the other practices
Type III	modeling/application in a real-world context or scenario	**Sub-Claim D:** solve real-world problems engaging particularly in the modeling practice	primarily MP.4, but may also involve any of the other practices

These reporting categories are the same as the reporting categories on the spring 2015 mathematics student reports and will provide parents and educators valuable information about

- overall student performance, including readiness to continue further studies in mathematics;
- student performance broken down by mathematics subcategories, which may help identify when students need additional support or more challenging work; and
- how well schools and districts are helping students achieve higher expectations.

IV. Design of LEAP Mathematics Assessments

The LEAP mathematics assessment in grade 5 contains a total of 62 points. The table below shows the breakdown of task types and point values.

Grade 5 Mathematics Test Design				
Test Session	**Type I (points)**	**Type II (points)**	**Type III (points)**	**Total (points)**
Session 1: No Calculator	14	4	3	21
Session 2: No Calculator	14	3	3	20
Session 3: No Calculator	12	3	6	21

V. Assessable Content

The tasks on the LEAP mathematics test are aligned directly to the Louisiana Mathematics Standards for all sub-claims. Type I tasks, designed to assess conceptual understanding, fluency, and application, are aligned to the major content for grade 5 (reported in sub-claim A) and additional and supporting content for grade 5 (reported in sub-claim B). Type II tasks are designed to assess student reasoning ability of the major content for grade 5 in applied contexts (reported in sub-claim C). Type III tasks are designed to assess student modeling ability of select content for grades 4 or 5 in applied contexts (reported in sub-claim D). Type II and III tasks are further aligned to PARCC evidence statements for sub-claims C and D. See the table in the Appendix (section VIII of this document) for a listing of assessable content of the Louisiana Mathematics Standards and PARCC evidence statements.

VI. LEAP Test Administration Policies

Administration Schedule

The spring LEAP ELA and mathematics assessments will be administered during **one** testing window and will be available to districts as paper-based tests (PBT) and computer-based tests (CBT). The table below lists the PBT administration schedule for the spring ELA, mathematics, and science assessments.

Paper-Based Test Administration Schedule: Grade 5		
Day 1 April 25	English Language Arts Session 1: Research Simulation Task	90 minutes
	Mathematics Session 1: No Calculator	75 minutes
Day 2 April 26	English Language Arts Session 2: Literary Analysis Task **OR** Narrative Writing Task + 1-2 passage sets	75 minutes
	Mathematics Session 2: No Calculator	75 minutes
Day 3 April 27	English Language Arts Session 3: Reading Literary and Informational Texts	75 minutes
	Mathematics Session 3: No Calculator	75 minutes
Day 4 April 28	Science Session 1: Multiple-Choice	Suggested time: 60 minutes
	Science Session 2: Task	Suggested time: 30 minutes
Day 5 April 29	Make-Up Sessions	Depends on session

The table below lists the CBT administration schedule and policies for the spring ELA and mathematics assessments.

Computer-Based Test Administration Schedule: Grade 5		
Test Window: April 11, 2016 – May 6, 2016		
English Language Arts	Session 1: Research Simulation Task	90 minutes
Mathematics	Session 1: No Calculator	75 minutes
English Language Arts	Session 2: Literary Analysis Task **OR** Narrative Writing Task + 1-2 passage sets	75 minutes
Mathematics	Session 2: No Calculator	75 minutes
English Language Arts	Session 3: Reading Literary and Informational Texts	75 minutes
Mathematics	Session 3: No Calculator	75 minutes

Computer-Based Test Administration Policies: For the administration of the computer-based tests, schools must follow the policies below.

- Sessions must be completed in the order listed above.
- No more than two sessions can be scheduled per day (one English Language Arts and one Mathematics).
- Students must be provided breaks between sessions.
- All students in a particular grade must be tested on the same session at the same time as or as close to the same time as possible. If not possible, schools should have procedures in place to isolate students who have tested from those who are waiting to test.
- Make-up sessions must be administered as soon as a student returns to school.

The LEAP ELA and mathematics tests are **strictly timed** and no additional time is permitted, except for students who have a documented extended time accommodation (e.g., an IEP).

Paper-Based Tests

Students taking the paper-based tests, except those using braille test materials, will enter all answers in their test booklets. There will be no separate answer documents. Each session of the mathematics test booklet will be sealed; day indicator bars will appear on the outside margin of each page. Instructions for how to manage the test booklets, including how to break the seals, will be outlined in the Test Administration Manual.

Multiple-Choice tasks have three or four options. Students will shade the bubble of the correct answer.

Ⓐ Option A

Ⓑ Option B

● Option C

Ⓓ Option D

Multiple-Select tasks for grade 5 have five or six options. Students will fill in the number of correct answers identified in the stem of the question. The number of correct answers will vary from task to task. The sample below asks for two correct answers.

● Option A

Ⓑ Option B

● Option C

Ⓓ Option D

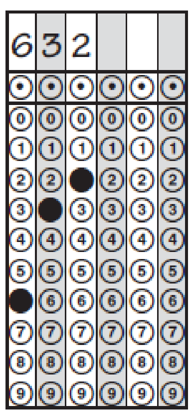
Ⓔ Option E

Ⓕ Option F

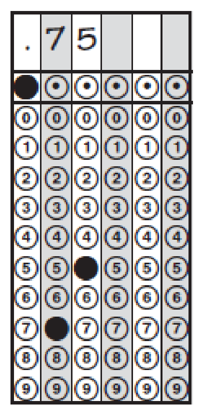
Fill-in-the-Blank Grids

For fill-in-the-blank tasks on paper-based tests, students will write the number (whole number or decimal) in the boxes at the top of the grid, starting with the first box on the left. Numbers are entered **without** commas. Students will then shade the bubble in the column that corresponds to the entry (digit) in the top row. Blank spaces within the answer are not allowed.

To answer 632 in a question, fill in the answer grid as shown below.



To answer .75 in a question, fill in the answer grid as shown below.



Note: Should a student mistakenly start in a column other than column 1, the entry will be scored as correct under the following conditions:

- There are no spaces within the answer.
- The answer fits within the remaining columns.

Fractional Answers

Type I tasks with potential fractional answers in PBT forms will be presented in multiple-choice or multiple-select formats. Students will be expected to be able to correctly write and apply fractions in Type II (reasoning) and Type III (modeling) constructed-response tasks.

Answering Type II and Type III Tasks

When answering Type II (reasoning) and Type III (modeling) tasks, students need to make sure to write their explanations and/or to show their work in the box provided for each question. Any information written outside the box or which has been scratched out will not be scored.

The following information presents guidelines for marking/writing in the mathematics test booklet.

- Students may use yellow highlighters to highlight text in the test booklet.
- Students may write and do scratch work in the test booklet, but must avoid making stray marks in the answer circles on the multiple-choice and multiple-select tasks or in the fill-in-the-blank grids.
- Highlighting text in options and placing an X to the right of the text in an option are recommended ways for students to eliminate options. However, crossing out options could create scoring issues if students mark through answer circles.

Computer-Based Tests

Students taking the computer-based tests will enter their answers into the online testing system. The way each answer is entered depends on the task type. For example, for a multiple-choice task, a student will select the circle next to the correct answer. For fill-in-the-blank and constructed-response tasks on online test forms, students will type in the number (whole number or decimal) or text in the box using the typing tools provided. Some response boxes limit the length of the response that can be typed and whether numbers and/or text can be typed.

Computer-based tests allow for the use of technology-enhanced items (TEI) that use innovative, engaging ways to assess student understanding of material beyond the limitations of a traditional selected-response task. A TEI may require the student to sort shapes into categories by using a drag-and-drop tool, show a fraction or an area by selecting cells in a figure, or create angles by rotating rays.

The computer-based tests include the following online tools, which allow a student to select answer choices, “mark” tasks, eliminate answer options, take notes, enlarge the task, guide the reading of a task line by line, use a ruler and protractor, see the mathematics reference sheet, and use an equation builder for entering special characters (similar to what a student can do on the paper-based tests). A help tool is also featured to assist students as they use the online system.

- Pointer tool
- Highlighter tool
- Cross-Off tool
- Sticky Note tool
- Magnifying tool
- Line Guide
- Measurement tools
- Mathematics Reference Sheet
- Equation Builder
- Help tool

All students taking the computer-based tests should work through the Online Tools Training to practice using the online tools so they are well prepared to navigate the online testing system.

Permitted Testing Materials

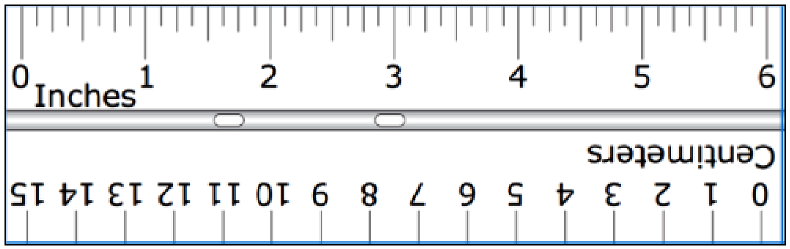
The chart that follows summarizes the tools and resources for the grade 5 mathematics assessment.

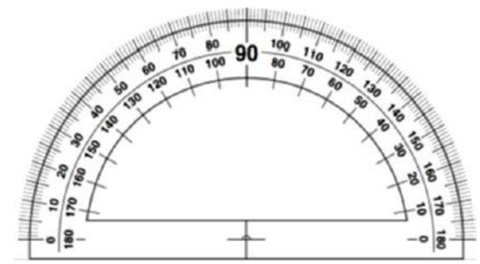
ASSESSMENT RESOURCES/TOOLS FOR GRADE 5

Provided (by vendor or part of online system)	Required (provided by school)	Other Allowable (may be used, not required)
$^1/_8$ -inch and centimeter ruler, protractor, and mathematics reference sheet	Scratch paper (lined, graph, or un-lined)	Yellow highlighter

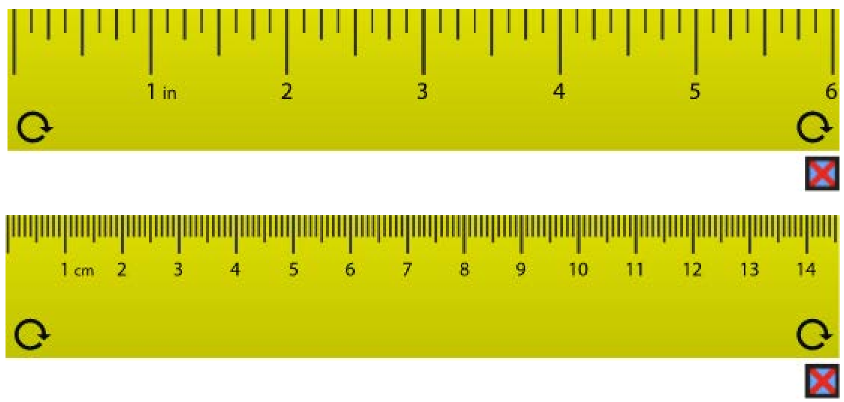
Provided tools are sent by the test vendor to the districts for the districts to distribute during testing; districts and students may **not** substitute their own tools for provided tools. Required tools must be supplied by the school and distributed to all testers during testing. Schools may give or permit students to bring *allowable* tools. If schools permit students to bring their own *allowable* tools, tools must be given to the test administrator prior to testing to ensure that the tools are appropriate for testing (e.g., tools do not have any writing on them).

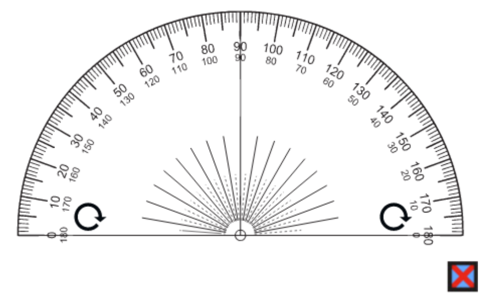
Grade 5 ruler and protractor provided on the LEAP paper-based mathematics assessment (not actual size):





Grade 5 rulers and protractor provided on the LEAP computer-based mathematics assessment (not actual size):





To ensure accurate measurement, the size of the computer-based ruler, along with the object being measured, varies depending on the computer monitor's resolution. To practice with the computer-based ruler and protractor, please visit the Online Tools Training.

Calculators

Students are not allowed to use calculators during the administration of any mathematics test in grade 5.

UPDATE: Clarification of Calculator Policy

For students with the approved accommodation, a hand-held four-function calculator is allowed.

- Square root, percent, memory, and +/- keys are also allowed but not required.
- A hand-held calculator is necessary for both the PBT and CBT; an online calculator will not be available.
- If a student needs an adaptive calculator (e.g., large key, talking), the student may bring his or her own or the school may provide one, as long as it is specified in his or her approved IEP or 504 Plan.

- The student should use the calculator they have used regularly throughout the school year in their classroom and are most familiar with, provided their regular-use calculator is not outside the boundaries of what is allowed, as detailed above.

Reference Sheets

Students in Grade 5 will be provided a reference sheet with the information below.

Grade 5 Reference Sheet

1 mile = 5280 feet	1 pound = 16 ounces	1 cup = 8 fluid ounces
1 mile = 1760 yards	1 ton = 2000 pounds	1 pint = 2 cups
		1 quart = 2 pints
		1 gallon = 4 quarts
		1 liter = 1000 cubic centimeters

Right Rectangular Prism	$V = B \times h$ or $V = l \times w \times h$

Requisite Knowledge

Students in grade 5 will be required to know relative sizes of measurement units within one system of units. Therefore, the following requisite knowledge is necessary in grade 5 and will **not** be provided in a reference sheet.

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

For more information about accessibility and accommodations, please refer to the 2015–2016 LEAP Accessibility Features and Accommodations Overview.

VII. Resources

UPDATE: Links to More Resources

- Grades 3–5 Math Guidebook: offers comprehensive information to support teachers in creating yearly, unit, and daily instructional plans for students
- Fifth Grade Teacher Library: provides links to grade-specific resources, such as the standards, shared teacher resources, and instructional plans
- EAGLE Sample Test Items: provides teachers a bank of questions that can be used for instructional and assessment purposes
- 2014–2015 Grade 5 Practice Test: provides teachers and students with additional tasks that are similar to the tasks on the 2016 test, but should not be administered as a "practice test" because test designs for 2015 and 2016 are not the same
- PARCC's Grade 5 Math Released Items: provides teachers and students with actual test items from the PARCC 2015 test, including rubrics, alignment, and scoring information
- 2015–2016 Grade 5 LEAP Practice Test and Scoring Guide: offers samples of paper-based grade-level practice tests to help prepare students for the spring assessments
- 2015-2016 Grade 5 Online LEAP Practice Test, Scoring Guide, and Answer Sheet: offers samples of computer-based grade-level practice tests to help prepare students for the spring assessments; the online practice test is accessed through INSIGHT
- Online Tools Training: provides teachers and students examples of interactive, technology-enhanced items so they can become familiar with the computer-based testing format
- 2015–2016 LEAP Accessibility Features and Accommodations Overview: provides an overview of Louisiana's accessibility features and accommodations for grades 3–8 spring 2016 testing, clarifying differences between paper-based and online testing
- 2015-2016 LEAP Mathematics Practice Test Guidance: provides teachers with information about test structure, recommended uses, general cautions, item types, and scoring of the paper-based and computer-based LEAP tests
- Guide to the LEAP Online Equation Builder Grades 3-5: provides teachers with information on using the equation builder within the open-response boxes on the CBT
- Guide to Administering the Online Practice Tests: provides information regarding the administration and scoring process needed for the online practice tests

VIII. Appendix

Assessable Content for Sub-Claim A (Major Content)

Sub-Claim A: Major Content	
5.NBT.A	**Understand the place value system.**
5.NBT.A.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
5.NBT.A.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
5.NBT.A.3	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
5.NBT.A.4	Use place value understanding to round decimals to any place.
5.NBT.B	**Perform operations with multi-digit whole numbers and with decimals to hundredths.**
5.NBT.B.5	Fluently multiply multi-digit whole numbers using the standard algorithm.
5.NBT.B.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
5.NF.A	**Use equivalent fractions as a strategy to add and subtract fractions.**
5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*
5.NF.A.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. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.
5.NF.B	**Apply and extend previous understandings of multiplication and division.**
5.NF.B.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
5.NF.B.5	Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
5.NF.B.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1] a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.* b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.* c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*
5.MD.C	**Geometric measurement: understand concepts of volume.**
5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
5.MD.C.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and improvised units.
5.MD.C.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. 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.

[1] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.

Assessable Content for Sub-Claim B (Additional and Supporting Content)

Sub-Claim B: Additional and Supporting Content	
5.OA.A	**Write and interpret numerical expressions.**
5.OA.A.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
5.OA.A.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*.
5.OA.B	**Analyze patterns and relationships.**
5.OA.B.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so*.
5.MD.A	**Convert like measurement units within a given measurement system.**
5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
5.MD.B	**Represent and interpret data.**
5.MD.B.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*.
5.G.A	**Graph points on the coordinate plane to solve real-world and mathematical problems.**
5.G.A.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).
5.G.A.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
5.G.B	**Classify two-dimensional figures into categories based on their properties.**
5.G.B.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
5.G.B.4	Classify two-dimensional figures in a hierarchy based on properties.

Assessable Content for Sub-Claim C (Reasoning Applications)

Sub-Claim C: Reasoning Applications
Base explanations/reasoning on place value and/or understanding of operations. Content Scope: Knowledge and skills articulated in • 5.NBT.B.6 – Tasks do not have a context.
Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in • 5.NBT.B.7 – Tasks do not have a context. Student need not use formal property names. Unneeded parentheses should not be used.[2] • 5.MD.C.5a – Students need not use formal property names.
Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in • 5.NBT.B.6 • 5.NF.B.3, 5.NF.B.4a • 5.NF.B.7
Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in • 5.NBT.B.7
Reason about the place value system itself. Content Scope: Knowledge and skills articulated in • 5.NBT.A - Tasks do not involve reasoning about place value in service of some other goal (e.g., to multiply multi-digit numbers). Rather, tasks involve reasoning directly about the place value system, in ways consistent with the indicated content scope.
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 • 5.NF.A.2 • 5.NF.B.4b • 5.NBT.B.6 • 5.NBT.B.7 • 5.MD.C
Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) • 5.NF.A.2 • 5.NF.B.4a • 5.NF.B.7a, 5.NF.B.7b
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 • 5.NF.B.5b • 5.NF.A.1 • 5.NF.A.2 • 4.NBT, 4.NF.A, 4.NF.B – Tasks may have scaffolding.[3]

[2] For example, use 4 + 3 x 2 rather than 4 + (3 x 2).
[3] 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.

Present solutions to multi-step[4] 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 • 5.MD.C.5c

Assessable Content for Sub-Claim D (Modeling Applications)

Sub-Claim D: Modeling Applications
Solve multi-step[4] contextual word problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in Sub-claim A[5]. Tasks may have scaffolding.[3] 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, or 3-digit x 3-digit.
Solve multi-step[4] contextual problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in 4.OA, 4.NBT, 4.NF, and/or 4.MD. Tasks may have scaffolding.[3]

[4] Multi-step problems must have at least 3 steps.
[5] Standards 5.NF.B.5b and 5.MD.C.5a are not assessable in Modeling.