This guide includes:



## PURPOSE

This document is designed to assist Louisiana educators in understanding the LEAP 2025 mathematics assessment for grade 5, which will be administered in the spring.

### Introduction

All students in grades 3–8 will take the LEAP 2025 English language arts (ELA) and mathematics assessments, which offer the following:

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

## MATHEMATICS ASSESSMENT DESIGN

Each item on the LEAP 2025 assessment is referred to as a task and is identified by one of three types: Type I, Type II, or Type III. As shown in the table, each of the three task types is aligned to one of four reporting categories: Major Content, Additional & Supporting Content, Expressing Mathematical Reasoning, or Modeling & Application. Each task type is designed to align with at least one of the Louisiana Student Standards for Mathematical Practice (MP), found on pages 6-8 in the K-12 Louisiana Student Standards for Mathematics.

| Task Type | Description | Reporting Category | Mathematical Practice (MP) |
|---|---|---|---|
| **Type I** | conceptual understanding, fluency, and application | **Major Content:** solve problems involving the major content for grade 5 **Additional & Supporting Content:** 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 | **Expressing Mathematical Reasoning:** 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 | **Modeling & Application:** 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 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.

The LEAP 2025 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** | 14 | 4 | 3 | 21 |
| **Session 2** | 14 | 3 | 3 | 20 |
| **Session 3** | 12 | 3 | 6 | 21 |

## ASSESSABLE CONTENT

The tasks on the LEAP 2025 mathematics test are aligned directly to the Louisiana Student Standards for Mathematics (LSSM) for all reporting categories. Type I tasks, designed to assess conceptual understanding, fluency, and application, are aligned to the major, additional, and supporting content for grade 5. Some Type I tasks may be further aligned to LEAP 2025 evidence statements for the Major Content and Additional & Supporting reporting categories and allow for the testing of more than one of the student standards on a single item/task. Type II tasks are designed to assess student reasoning ability of selected major content for grades 4 or 5 in applied contexts. Type III tasks are designed to assess student modeling ability of selected content for grades 4 or 5 in applied contexts. Type II and III tasks are further aligned to LEAP 2025 evidence statements for the Expressing Mathematical Reasoning and Modeling & Application reporting categories. All tasks will be reviewed and vetted by teacher committees to verify direct and full

alignment to the LSSM. LEAP 2025 evidence statements for grade 5 are labeled as "LEAP.I.5.#" for Type I tasks, "LEAP.II.5.#" for Type II tasks, and "LEAP.III.5.#" for Type III tasks. See the table in Appendix A for a listing of assessable content of the LSSM and LEAP 2025 evidence statements.

## TEST ADMINISTRATION POLICIES

### Administration Schedule

The LEAP 2025 ELA, mathematics, and social studies assessments will be administered during **one** testing window and will be available to districts as computer-based tests (CBT) for grade 5. The table below lists just one example CBT administration session order for grade 5, followed by the policies and recommendations for the spring ELA, mathematics, and social studies assessments. Examples of testing schedules can be found here. The LEAP 2025 ELA, mathematics, and social studies tests are **strictly timed** and no additional time is permitted, except for students who have a documented extended time accommodation (e.g., an IEP).

**Computer-Based Test Administration: Grade 5**

| Test Window: April 3, 2017 – May 5, 2017 | | | |
|---|---|---|---|
| English Language Arts | Session 1: | Literary Analysis Task + 1 passage set **OR**<br>Research Simulation Task | 90 minutes |
| Mathematics | Session 1 | | 75 minutes |
| English Language Arts | Session 2: | Research Simulation Task **OR**<br>Narrative Writing Task + 1 reading set with one or two texts | 90 minutes |
| Mathematics | Session 2 | | 75 minutes |
| English Language Arts | Session 3: Reading Literary and Informational Texts | | 45 minutes |
| Mathematics | Session 3 | | 75 minutes |
| Social Studies | Session 1: Item Sets | | 90 minutes |
| Social Studies | Session 2: Task Set | | 45 minutes |
| Social Studies | Session 3: Item Sets and Discrete Items | | 90 minutes |

Computer-based testing allows districts some flexibility in scheduling. However, to reduce incidences of testing irregularities, districts must adhere to the following scheduling and administration practices:

- Testing students in the same grade level across the district at or very close to the same time
- Completing makeup testing for students immediately upon their return
- Limiting student interaction during breaks between test sessions
- Isolating students who have not completed testing for the day (e.g., students with extended time accommodation)
- Preventing interaction between groups of students taking the same tests at different times within a testing day
- Requiring the completion of a session once it is opened (i.e., limiting the reopening of test sessions)
- Taking the sessions within a content area in the correct order (e.g., ELA Session 1 taken before ELA Session 2)

We also recommend

- limiting sessions to no more than three in one day for a student; and
- administering no more than one session that includes an extended-response task or writing prompt (i.e., Social Studies Session 2, ELA Session 1, and ELA Session 2) in a day to an individual student.

The *i*LEAP science assessment will only be available to districts as paper-based tests (PBT). The table below lists the PBT administration schedule for the spring science assessments. Although the *i*LEAP science test is not timed, suggested times are included.

**Paper-Based Test Administration Schedule: Grade 5 Science**

| Testing Date: May 5, 2017 | | |
|---|---|---|
| **May 5** | Science Session 1: Multiple-Choice | Suggested time: 60 minutes |
| | Science Session 2: Task | Suggested time: 30 minutes |

## Computer-Based Tests

Students 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. 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 should work through the Online Tools Training (available in INSIGHT or here using the Chrome browser) to practice using the online tools so they are well prepared to navigate the online testing system.**

## Sample Computer-Based Test Items

This section includes six Type I items, one Type II item, and one Type III item as they would appear on a CBT form. The answer key for each Type I item and scoring rubrics for each constructed-response item is located in Appendix B. Look for these items in the updated OTT (*available Winter*).

**Multiple-Choice Task**

Solve $\frac{6}{6} - \frac{2}{3}$

(a) $\frac{5}{6}$

(b) $\frac{4}{3}$

(c) $\frac{2}{3}$

(d) $\frac{1}{3}$

**Multiple-Select Task**

One student drew a square. Another student drew a rhombus that was not a square.

Select the **three** properties that both figures have.

(a) They have four right angles.

(b) They have four sides that are the same length.

(c) They have two pairs of parallel sides.

(d) They have opposite angles that are the same measure.

(e) They have four angles that are the same measure.

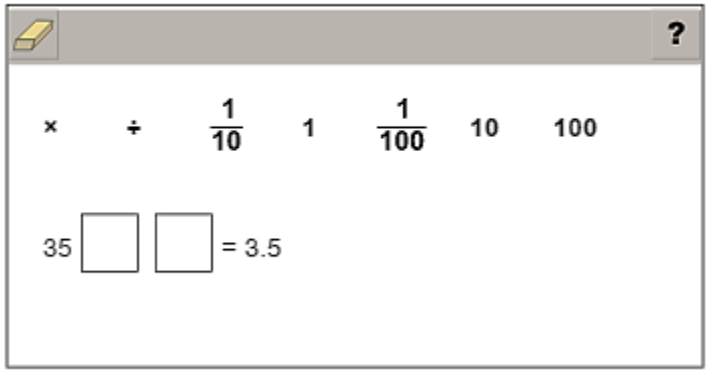
**Fill-in-the-Blank Task**

What is the value of the expression $20 \div [1 + (15 \div 5)]$?

Enter your answer in the box.

**TEI: Drag-and-Drop Task**

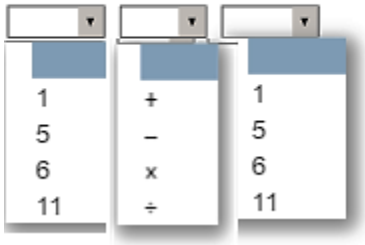
Drag and drop an operation symbol and a number into the appropriate blanks to make a true statement.




**TEI: Dropdown Menu Task**

Select the correct numbers and symbol to create an expression that is equivalent to $\frac{5}{6}$.

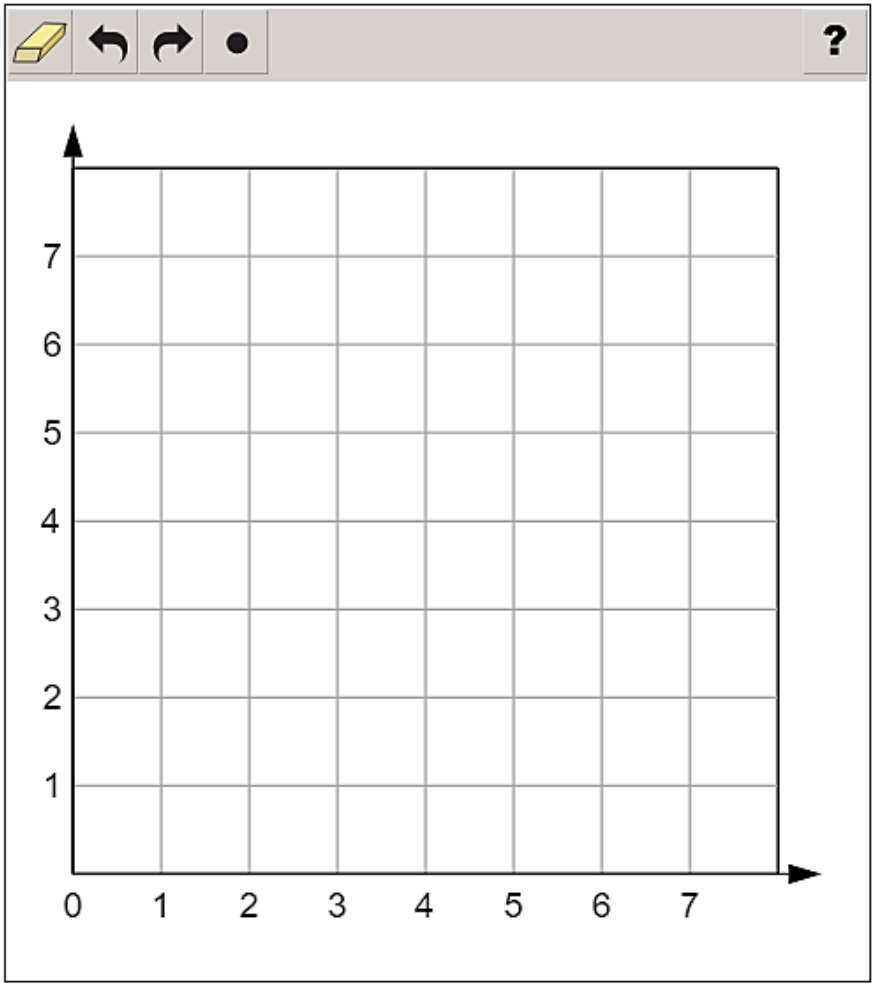
Select from the drop-down menus to correctly create the expression.



**TEI: Coordinate Plane Task**

Plot point *A* at (4, 3), point *B* at (7, 5), and point *C* at (3, 1).

Select the places on the coordinate plane to plot the points.

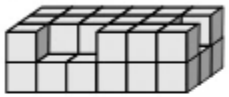


**Type II Constructed-Response Task**

**Part A**

Jake built a figure out of centimeter cubes.

**Jake's Figure**



What is the volume of Jake's figure?

Enter your answer in the box.

☐ cubic centimeters

**Part B**

Tom also made a figure. The length of his figure is 9 centimeters, the width is 2 centimeters, and the height is 1 centimeter.

What is the volume of Tom's figure?

☐ cubic centimeters

**Part C**

What is the toal volume for both Tom and Jake's figures?

Show your work and explain how you found the total volume.

EQ

**Type III Constructed-Response Task**

An egg farm packages 264 total cartons of eggs each month. The farm has 3 different sizes of cartons.

- The small carton holds 8 eggs, and $\frac{1}{6}$ of the total cartons are small.
- The medium carton holds 12 eggs, and $\frac{2}{3}$ of the total cartons are medium.
- The large carton holds 18 eggs, and the rest of the total cartons are large.

Determine how many of each size of carton is needed each month. Then determine how many eggs are needed to fill the 264 cartons. Show your work or explain your answers.

Enter your answers and your work or explanations in the box provided.

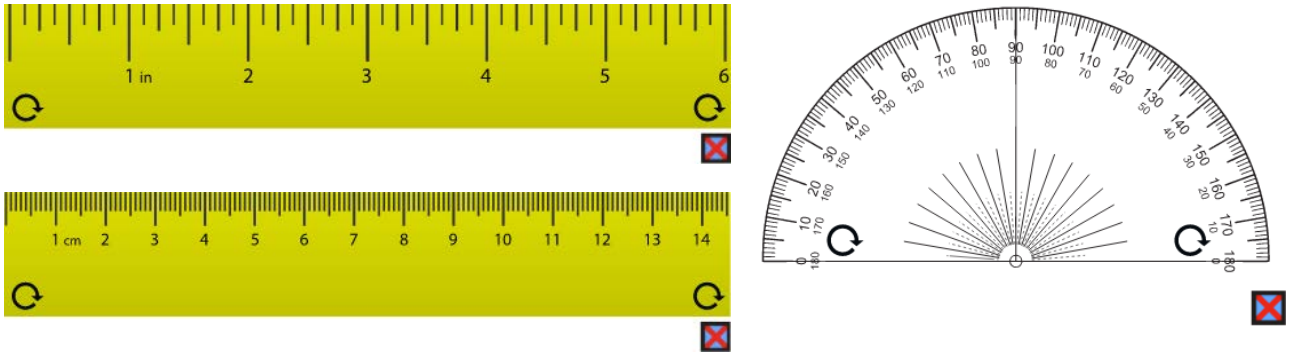
EQ

## Permitted Testing Materials

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

| Tools | Provided | Guidelines |
|---|---|---|
| scratch paper (lined, graph, un-lined), two pencils | by Test Administrator | • All tools available for all sessions<br>• Reference sheets may be printed from *eDIRECT*<br>• Tools provided by Test Administrator must not be written on |
| $\frac{1}{8}$–inch ruler, centimeter ruler, and protractor | online | |
| Grade 5 Mathematics Reference Sheet | online and/or by Test Administrator | |

**Grade 5 rulers and protractor provided on the LEAP 2025 CBT (not actual size):**




To ensure accurate measurement, the size of the computer-based ruler and protractor, along with the object being measured, varies depending on the computer monitor's resolution. To practice with the computer-based ruler and protractor, visit the Online Tools Training (available in INSIGHT or here using the Chrome browser).

## Calculator Policy

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

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 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 Sheet

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 |

## RESOURCES

- Online Tools Training: (*Available now, updated-version available Winter*) provides teachers and students examples of interactive, technology-enhanced items so they can become familiar with the computer-based testing format; available in INSIGHT or here using the Chrome browser; includes Spanish version
- Grade 5 LEAP 2025 Computer-Based Practice Test and Scoring Guide: (*Available Winter*) offers a computer-based grade-level practice test to help prepare students for the spring assessments; accessed through INSIGHT; Spanish version also available
- Accessibility and Accommodations Overview: (*Updated version available Winter*) provides an overview of Louisiana's accessibility features and accommodations for grades 3–8 spring 2017 testing
- LEAP 2025 Practice Test Guidance: (*Available Winter*) provides teachers with information about test structure, recommended uses, general cautions, item types, and scoring
- 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; Spanish version also available
- Guide to Administering the Online Practice Tests: (*Available Winter*) provides information regarding the administration and scoring process needed for the online practice tests
- Practice Tests Library: includes current and previous years' practice tests for additional practice with assessment tasks
- Fifth Grade Teacher Library: provides links to grade-specific resources, such as the standards, shared teacher resources, and instructional plans
  K-12 Louisiana Student Standards for Math: explains the development of and lists the math content standards for Louisiana students
- Grade 5 math - Teachers Companion Document PDF or word doc: contains descriptions of each standard to answer questions about the standard's meaning and how it applies to student knowledge and performance
- Grade 5 Remediation Guide: reference guide for teachers to help them more quickly identify the specific remedial standards necessary for every standard, includes information on content emphasis
- Grade 5 Crosswalk: shows specifically how the math standards have changed from 2015-2016 to 2016-2017
- K-12 LSSM Alignment to Rigor: provides explanations and a standards-based alignment to assist teachers in providing a rigorous education
- EAGLE Sample Test Items: provides teachers a bank of questions that can be used for instructional and assessment purposes

# APPENDIX A

## Assessable Content for the Major Content Reporting Category (Type I)

| LSSM Content Standards | |
|---|---|
| 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 and apply patterns in the number of zeros of the product when multiplying a number by powers of 10. Explain and apply patterns in the values of the digits in the product or the quotient, when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. *For example, 100 = 1, $10^1$ = 10 ... and 2.1 x $10^2$ = 210.* |
| 5.NBT.A.3 | Read, write, and compare decimals to thousandths.<br>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).<br>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, subtracting multiples of the divisor, and/or the relationship between multiplication and division. Illustrate and/or explain the calculation by using equations, rectangular arrays, area models, or other strategies based on place value. |
| 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; justify the reasoning used with a written explanation. |
| 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.<br>a. 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.<br>b. 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.<br>a. Interpret the product $(m/n) \times q$ as $m$ parts of a partition of $q$ into $n$ equal parts; equivalently, as the result of a sequence of operations, $m \times q \div n$. *For example, use a visual fraction model to show understanding, and create a story context for (m/n) x q.*<br>b. Construct a model to develop understanding of the concept of multiplying two fractions and create a story context for the equation. [In general, $(m/n) \times (c/d) = (mc)/(nd)$.]<br>c. 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.<br>d. 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:<br>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. |
| 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]<br>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*.<br>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*.<br>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.<br>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.<br>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. |

[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.

| | |
|---|---|
| 5.MD.C.5 | Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.<br>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.<br>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. |
| **LEAP 2025 Evidence Statements** | |
| LEAP.I.5.1 | Demonstrate understanding of the place value system by combining or synthesizing. Content Scope: Knowledge and skills articulated in<br>• 5.NBT.A |
| LEAP.I.5.2 | Perform exact or approximate multiplications and/or divisions that are best done mentally by applying concepts of place value, rather than by applying multi-digit algorithms or written strategies.<br>• 5.NBT.A, 5.NBT.B – Tasks do not have a context. |
| LEAP.I.5.3 | Solve word problems. Content Scope: Knowledge and skills articulated in<br>• 5.NF.A – Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. |

Fixed lettering error

## Assessable Content for the Additional & Supporting Content Reporting Category (Type I)

| **LSSM Content Standards** | |
|---|---|
| 5.OA.A | Write and interpret numerical expressions. |
| 5.OA.A.1 | Use parentheses or bracket in numerical expressions, and evaluate expressions with these symbols. |
| 5.OA.A.2 | Write simple expressions that record calculations with whole numbers, fractions, and decimals, 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 x (18,932 + 9.21) is three times as large as 18,932 + 9.21, 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, and use these conversions in solving multi-step, real-world problems (e.g., convert 5 cm to 0.05 m; 9 ft to 108 in). |
| 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 in the ordered pair indicates how far to travel from the origin in the direction of one axis, and the second number in the ordered pair 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 quadrilaterals in a hierarchy based on properties. (Students will define a trapezoid as a quadrilateral with at least one pair of parallel sides.) |
| **LEAP 2025 Evidence Statements** | |
| LEAP.I.5.4 | Solve one-step word problems involving multiplying multi-digit whole numbers. Content Scope: Knowledge and skills articulated in<br>• 5.NBT.B.5 – The given factors are such as to require an efficient/standard algorithm (e.g., 726 × 4871). Factors in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 7250 × 400). For purposes of assessment, the possibilities for multiplication are 1-digit × 2-digit, 1-digit × 3-digit, 2-digit × 3-digit, 2-digit × 4-digit, or 3-digit × 3-digit. Word problems shall include a variety of grade-level appropriate applications and contexts. |
| LEAP.I.5.5 | Solve word problems involving multiplication of three two-digit numbers. Content Scope: Knowledge and skills articulated in<br>• 5.NBT.B.5 – The given factors are such as to require an efficient/standard algorithm (e.g., 76 × 48 × 39). Factors in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 50 × 20 × 15). Word problems shall include a variety of grade-level appropriate applications and contexts. |

## Assessable Content for the Expressing Mathematical Reasoning Reporting Category (Type II)

| **LEAP 2025 Evidence Statements** | |
|---|---|
| LEAP.II.5.1 | Base explanations/reasoning on place value and/or understanding of operations. Content Scope: Knowledge and skills articulated in<br>• 5.NBT.B.6 – Tasks do not have a context. |
| LEAP.II.5.2 | Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in<br>• 5.NBT.B.7 – Tasks do not have a context. Student need not use formal property names. Unneeded parentheses should not be used.[2]<br>• 5.MD.C.5a – Students need not use formal property names. |

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

| | |
|---|---|
| LEAP.II.5.3 | Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in<br>• 5.NBT.B.6<br>• 5.NF.B.3, 5.NF.B.4a<br>• 5.NF.B.7 |
| LEAP.II.5.4 | Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in<br>• 5.NBT.B.7 |
| LEAP.II.5.5 | Reason about the place value system itself. Content Scope: Knowledge and skills articulated in<br>• 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. |
| LEAP.II.5.6 | 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<br>• 5.NF.A.2<br>• 5.NF.B.4b<br>• 5.NBT.B.6<br>• 5.NBT.B.7<br>• 5.MD.C |
| LEAP.II.5.7 | Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response)<br>• 5.NF.A.2<br>• 5.NF.B.4a<br>• 5.NF.B.7a, 5.NF.B.7b |
| LEAP.II.5.8 | 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<br>• 5.NF.B.5b<br>• 5.NF.A.1<br>• 5.NF.A.2<br>• 4.NBT, 4.NF.A, 4.NF.B – Tasks may have scaffolding.[3] |

[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.

| | |
|---|---|
| LEAP.II.5.9 | 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<br>• 5.MD.C.5c |

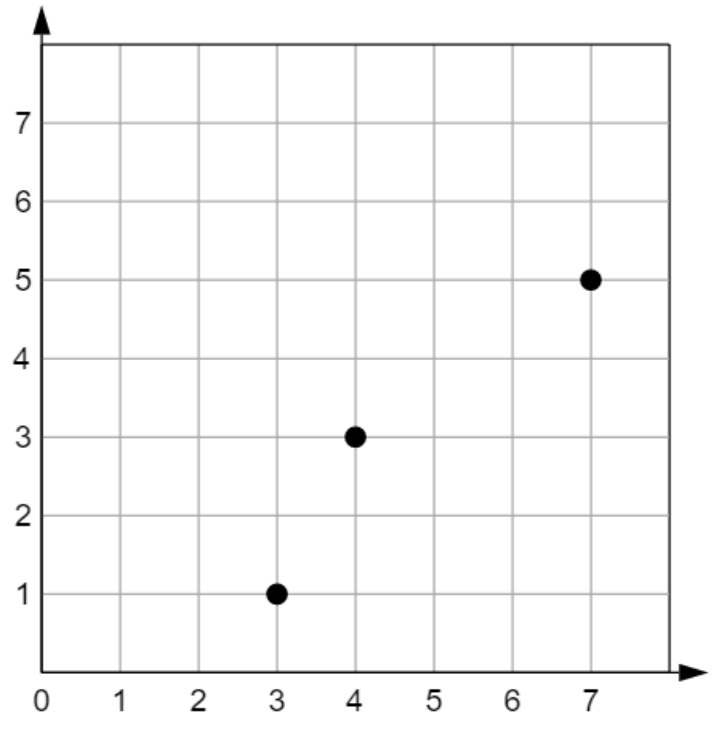
## Assessable Content for the Modeling & Application Reporting Category (Type III)

| **LEAP 2025 Evidence Statements** | |
|---|---|
| LEAP.III.5.1 | Solve multi-step[4] contextual word problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in the LSSM section of the Major Content Assessable Content table. Tasks may have scaffolding.[3] For assessment purposes, the possibilities for multiplication are 1-digit × 2-digit, 1-digit × 3-digit, 2-digit × 3-digit, 2-digit × 4-digit, or 3-digit × 3-digit. |
| LEAP.III.5.2 | 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.

## APPENDIX B

### Answer Key/Rubrics for Sample Items

| Item Type | Key | Alignment |
|---|---|---|
| Multiple-Choice | D | 5.NF.A1 |
| Multiple-Select | B, C, D | 5.G.A.1 |
| Fill-in-the-Blank | 5 | 5.OA.A.1 |
| TEI: Drag-and-Drop | 35 [×] [$\frac{1}{10}$] = 3.5 OR 35 [÷] [10] = 3.5 | 5.NBT.A.1 |
| TEI: Dropdown Menu | 5 ÷ 6 | 5.NF.A.3 |
| TEI: Coordinate Plane |  | 5.G.A.1 |

| | | |
|---|---|---|
| Type II Constructed-Response | See Rubric | LEAP.II.5.6 |
| Type III Constructed-Response | See Rubric | LEAP.III.5.1 |

**Type II Constructed-Response Rubric**

| **PART A** | |
|---|---|
| **Score** | **Description** |
| **1** | Student response includes the following element.<br>• Computation component: 33 |
| **0** | Student response is incorrect or irrelevant. |
| **Part B** | |
| **Score** | **Description** |
| **1** | Student response includes the following element.<br>• Computation component: 18 |
| **0** | Student response is incorrect or irrelevant. |
| **PART C** | |
| **Score** | **Description** |
| **2** | Student response includes each of the following 2 elements.<br>• Reasoning component: Correct explanation and work shown<br>• Computation component: 51 cubic centimeters<br><br>Sample Student Response:<br>I added the volume of each box to find the total volume.<br>33 + 18 = 51 cubic centimeters |
| **1** | Student response includes 1 of the 2 elements. |
| **0** | Student response is incorrect or irrelevant |

**Type III Constructed-Response Rubric**

| Score | Description |
|---|---|
| **3** | Student response includes each of the following 3 elements.<br>• Computation component: Number cartons: 44, 176, 44; 3256<br>• Modeling component: Correct work or explanation shown for determining the number of cartons of each size needed.<br>• Modeling component: Correct work or explanation shown for determining the total number of eggs needed to fill the 264 cartons.<br><br>Sample Student Response:<br>There are $264 \times \frac{1}{6} = \frac{264}{6} = 44$ cartons that hold 8 eggs.<br>There are $264 \times \frac{2}{3} = \frac{528}{3} = 176$ cartons that hold 12 eggs. There are 264 – 44 – 176 = 44 cartons that hold 18 eggs. The total number of eggs needed to fill all 264 cartons is<br>$44 \times 8 + 176 \times 12 + 44 \times 18 = 3{,}256.$ |
| **2** | Student response includes 2 of the 3 elements. Or, the student has a computation error, but provides a complete and valid explanation or process. |
| **1** | Student response includes 1 of the 3 elements. |
| **0** | Student response is incorrect or irrelevant. |