Louisiana STUDENT STANDARDS MATHEMATICS

MATH — MATHEMATICS | 1 — GRADE | F — FOCUS

This focus document shows where students and teachers should spend the large majority of their time in order to meet the expectations of the Louisiana Student Standards for Mathematics.

Not all content in a given grade is emphasized equally in the standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. More time in these areas is also necessary for students to meet the Louisiana Standards for Mathematical Practice.

To say that some things have greater emphasis is not to say that anything in the standards can safely be neglected in instruction. Neglecting material will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 1

Emphases are given at the cluster level. Refer to the Louisiana Student Standards for Mathematics for the specific standards that fall within each cluster. Students should spend the large majority[1] of their time on the major work of the grade.[2]

■ Major Clusters ▢ Supporting Clusters ○ Additional Clusters

1.OA.A	■	Represent and solve problems involving addition and subtraction.
1.OA.B	■	Understand and apply properties of operations and the relationship between addition and subtraction.
1.OA.C	■	Add and subtract within 20.
1.OA.D	■	Work with addition and subtraction equations.
1.NBT.A	■	Extending the counting sequence.
1.NBT.B	■	Understand place value.
1.NBT.C	■	Use place value understanding and properties of operations to add and subtract.
1.MD.A	■	Measure lengths indirectly and by iterating length units.
1.MD.B	○	Tell and write time.
1.MD.C	▢	Represent and interpret data.
1.MD.D	▢	Work with money.
1.G.A	○	Reason with shapes and their attributes.

HIGHLIGHTS OF MAJOR WORK IN GRADES K–8

K–2	Addition and subtraction – concepts, skills, and problem solving; place value
3–5	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6	Ratios and proportional relationships; early expressions and equations
7	Ratios and proportional relationships; arithmetic of rational numbers
8	Linear algebra and linear functions

REQUIRED FLUENCIES FOR GRADE 1

1.OA.C.6	Add/subtract within 10

1 At least 65% and up to approximately 85% of class time, with Grades K–2 nearer the upper end of that range, should be devoted to the major work of the grade.

2 Note, the critical areas are a survey of what will be taught at each grade level; the major work is the subset of topics that deserve the large majority of instructional time during a given year to best prepare students for college and careers.

EXAMPLES OF KEY ADVANCES FROM KINDERGARTEN TO GRADE 1

This section highlights some of the major grade-to-grade steps in the progression of increasing knowledge and skill detailed in the standards. Each key advance in mathematical content also corresponds to a widening scope of problems that students can solve. Examples of key advances are highlighted to stress the need to treat topics in ways that take into account where students have been in previous grades and where they will be going in subsequent grades.

- Students gradually come to employ mental strategies (such as counting on and making ten) that make use of embedded concepts of number and the properties of addition and subtraction; by contrast, kindergarten students determine sums and differences primarily by representing problems with objects or drawings.
- Students read and write numbers through 120 and learn the early elements of place value, in particular being able to think of a ten as a unit and understanding that the digits of a two-digit number represent the number of tens in that number and the number of remaining ones.
- Students use their understanding of place value and the properties of operations to represent, explain, and perform addition and subtraction of two-digit numbers in specified cases.
- Students represent and solve a large variety of addition and subtraction problems—that is, word problems, and problems set in classroom discussions, that involve addition and subtraction situations such as adding to, taking from, putting together, taking apart, comparing, etc., with different unknown quantities in the problem.
- Students write equations for a variety of reasons, such as expressing a decomposition of a number (16 = 9 + 7), expressing a piece of reasoning about numbers (9 + 7 = 9 + 1 + 6, along the way to making ten), or representing a word problem with an unknown (9 + ? = 16). Students use the equal sign appropriately, evaluate the truth of an equation, and determine unknown numbers that will make an equation true. Students make connections among concrete objects, pictorial representations, and equations.

FLUENCY EXPECTATIONS OR EXAMPLES OF CULMINATING STANDARDS

This section highlights individual standards that set expectations for fluency or that represent culminating masteries. Fluency standards are highlighted to stress the need to provide sufficient supports and opportunities for practice to help students meet these expectations. Wherever the word "fluently" appears in a content standard, it is used to mean "quickly and accurately." A key aspect of fluency in this sense is that it does not happen all at once in a single grade, but requires attention to student understanding as they progress towards college/career readiness. It is important to ensure that sufficient practice and extra support are provided at each grade, to allow all students to meet the standards that call explicitly for fluency. Fluency is not meant to come at the expense of understanding but is an outcome of a progression of learning and sufficient thoughtful practice. It is important to provide the conceptual building blocks that develop understanding in tandem with skill along the way to fluency; the roots of this conceptual understanding often extend to one or more grades earlier in the standards than the grade when fluency is finally expected. Culminating standards are highlighted to help give a sense of critical foundations needed to maintain progressions from grade to grade.

1.OA.C.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). Fluency is demonstrated as that, given any two numbers 0–10 with a sum less than or equal to 20, students can say the sum reasonably quickly, and likewise, for related differences, given one number and a total that is 10 or less, they can reasonably quickly say the amount taken away or the unknown addend. Students grow in fluency throughout the year as they work with addition and subtraction situations.

1.OA.D.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true, and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2. This standard relates to fluency when the additions and subtractions in the equations fall within 10, as they do in the italicized examples accompanying the standard.

1.OA.D.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ☐ -3, 6 + 6 = ☐. A crucial aspect of understanding and solving such equations is knowing where the total is in addition equations (alone on one side) and in subtraction equations (before the minus sign). Also important is that students see varied equation forms, especially those with only one number on the left side of the equation.

1.NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. Quickly finding 10 more or 10 less than a two-digit number is best thought of as an indicator of whether students have an understanding of place value for two-digit numbers.

EXAMPLES OF MAJOR WITHIN-GRADE DEPENDENCIES

This section highlights cases in which a body of content within a given grade depends, conceptually or logically, upon another body of content within that same grade. Examples of within-grade dependencies are highlighted to stress the need to organize material coherently within the grade. (Because of space limitations, only examples of large-scale dependencies are described in this section, but coherence is important for dependencies that exist at finer grain sizes as well.)

- 1.OA.B.3 calls for students to "apply properties of operations" and gives the example "If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known." Similarly, knowing 13 – 3 gives a good starting place for figuring out 13 – 4. Use of properties lets students apply knowledge that they have to situations that they need to figure out.
- 1.NBT.B.2 describes the place-value foundations for 1.NBT.B.3 and 1.NBT.C.4. Comparing numbers (1.NBT.B.3) involves thinking about the sizes of tens and ones, and adding two-digit numbers (1.NBT.C.4) involves adding tens with tens and ones with ones, and sometimes composing a ten. These ideas and methods rest on an understanding of the place-value units and the use of visual models of these units in solving and explaining problems using these standards.

EXAMPLES OF OPPORTUNITIES FOR CONNECTIONS AMONG STANDARDS, CLUSTERS, OR DOMAINS

This section highlights opportunities for connecting content in assessments, as well as in curriculum and instruction. Examples of connections are highlighted to stress the need to avoid approaching the standards as merely a checklist.

- A thorough understanding of how place-value language and notation represent number (cluster 1. NBT.A) is needed for meaningful calculation (cluster 1.NBT.B) in many ways—not just pencil-and-paper calculation, but mental calculation as well. For purposes of calculation, it is valuable to use the tens and ones in two-digit numbers, single-digit knowledge, and properties of the operations (1.OA.B.4). In Grade 1, calculation ranges from simple mental adding, such as 40 + 20 (add the 4 tens and 2 tens) and 58 + 6 (6 gives 2 to 58 to make 60, then 60 plus the 4 left in 6 equals 64), to the more complex cases that require composing ten ones to make a ten, such as 37 + 56.
- The study of word problems in grade 1 (1.OA.A.1, 1.OA.A.2) can be coordinated with students' growing proficiency with addition and subtraction within 20 (1.OA.C.6) and their growing proficiency with multidigit addition and subtraction (1.NBT) and can involve easier and more accurate forward methods.
- Word problems can also be linked to students' growing understanding of properties of addition and the relationship between addition and subtraction. For example, put-together/take-apart problems with unknown addends can show subtraction as finding an unknown addend.
- Units are a connection between place value (1.NBT) and measurement (1.MD). Working with place value depends on having a sense of the sizes of the base-ten units and being able to see a larger unit as composed of smaller units within the system. As measurement develops through the grades, measurement also depends on having a sense of the sizes of units and being able to see a larger unit as composed of smaller units within the system. In later grades, unit thinking will become important throughout arithmetic, including in the development of multidigit multiplication and division algorithms and the development of fraction concepts and operations.
- Measurement standards 1.MD.A.1 and 1.MD.A.2 together support and provide a context for the 1.OA.A.1 goal of solving problems that involve comparing. To meet 1.MD.A.1, students compare the lengths of two objects by means of a third object, e.g., a length of string, that allows a "copy" of the length of an immovable object to be moved to another location to compare with the length of a movable object. When students cannot find the exact difference because of the magnitude of the numbers that arise from measurement—as may occur in comparing two students' heights—they may still compare the measurements to know which is greater (1.NBT.B.3). (Grade 2 standard 2.MD.B.6 formalizes this idea on a number-line diagram.)
- While students are dealing with the limited precision of only whole hours and half-hours, they must distinguish the position of the hour hand and connect it to the geometry standard 1.G.A.3, partitioning circles into halves and quarters.
- Composing shapes to create a new shape (1.G.A.2) is the spatial analogue of composing numbers to create new numbers. This concept is also connected to length measurement (1.MD.A.2) since students must visualize an object that is to be measured as being built up out of equal-sized units (see also 1.G.A.3). Though assembling two congruent right triangles into a rectangle does not use the same facts or reasoning that assembling two fives into a ten uses, the idea of looking at how objects in some domain (numbers or shapes) can be combined to make other objects in that domain, and looking for new true statements one can make about these combinations, is a big idea that is common across mathematics.