Louisiana STUDENT STANDARDS MATHEMATICS

MATH — MATHEMATICS

K — 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 KINDERGARTEN

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

K.CC.A	■	Know number names and the count sequence.
K.CC.B	■	Count to tell the number of objects.
K.CC.C	■	Compare numbers.
K.OA.A	■	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
K.NBT.A	■	Work with numbers 11–19 to gain foundations for place value.
K.MD.A	○	Describe and compare measureable attributes.
K.MD.B	☐	Classify objects and count the number of objects in categories.
K.MD.C	☐	Work with money.
K.G.A	○	Identify and describe shapes.
K.G.B	☐	Analyze, compare, create, and compose shapes.

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 KINDERGARTEN

K.OA.A.5	Add/subtract within 5

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 IN KINDERGARTEN

This section highlights some of the major steps in the progression of increasing knowledge and skill detailed in the kindergarten 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 where will be going in subsequent grades.

- Students orally count to 100, beginning from any given number within 100, to support their later ability to count higher, as well as to develop a pattern of tens as they become skilled with naming the next ten (e.g. "forty-nine, fifty").
- Students pair objects 1:1 with counting words, and they learn that the last number word tells the total number of objects in a collection (up to 20). This is called "cardinal counting," as opposed to "rote counting" (reciting the counting words in order).
- Students use their ability to subitize (recognize small quantities at a glance) to help them compose and decompose numbers. For example, when students are using objects to show the decompositions 5 = 2 + 3 or 5 = 4 + 1, it is helpful for them to be able to subitize two or three objects.
- Students anchor to 5, realizing that 6 is one more than 5 and 4 is one less.
- Students build the crucial basis for place-value understanding of teen numbers by learning to anchor to 10 and to compose or decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8). This is also a crucial prerequisite for the grade 1 adding-and-subtracting strategy of making a ten and for the meaningful learning of writing numbers from 1 to 20.
- Students compare the number of objects in one group versus the number of objects in another group to find which has more or less, and eventually compare written numerals 1–10 to find which number describes more or less than another number.
- Students understand addition as joining collections and adding to collections, and they understand subtraction as taking collections apart or taking from collections. They represent these operations in a variety of ways.

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.

K.CC.A.1 Count to 100 by tens and ones.

K.CC.A.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 with 0 representing a count of no objects). It is recommended that, throughout the year, students work toward fluency in writing the numerals 0–10. Note that learning to write numerals is generally more difficult than learning to read them. It is common for students to reverse numbers at this stage (e.g., writing Ɛ for 3).[1]

K.CC.B.5 Count to answer "How many?" questions. a. Count objects up to 20, arranged in a line, a rectangular array, or a circle. b. Count objects up to 10 in a scattered configuration. c. When given a number from 1-20, count out that many objects.

K.CC.C.7 Compare two numbers between 1 and 10 presented as written numerals. If students are less than fluent in number comparisons by the end of kindergarten, then they may not have mastered early number concepts. Note that K.CC.C.6 (Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies) is a precursor to K.CC.C.7 and portrays the kind of concrete work that students should be doing en route to mastering numeral-based comparisons.

K.OA.A.5 Fluently add and subtract within 5. Given an oral or written expression with any two numbers 0–5 with a sum less than or equal to 5 (e.g., "three and one" or 3 + 1), students can find the sum reasonably quickly, and say or write it. For subtractions involving numbers of the same sizes, and given an oral or written expression (e.g., "four, take away one" or 4 – 1), students can find the difference reasonably quickly and say or write it. Some students may still need to use fingers or make drawings. Students grow in fluency throughout the year as they work with addition and subtraction situations.

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.)

- Much of the learning in kindergarten—K.CC.C.6, all of K.OA and K.NBT, and K.MD.B.3—depends on the foundational ability to count to answer "how many?" (K.CC.B.5), which itself is grounded in K.CC.B.4.

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.

- In addition to laying the groundwork for place value in grade 1, working with numbers 11–19 (K.NBT.A.1) provides opportunities for cardinal counting beyond 10 (see K.CC.B.5) and for writing two-digit numbers (see K.CC.A.3). Ten frames, strips with ten ones and some loose ones, and math drawings can be helpful for this work.
- K.MD.B.3 provides opportunities for cardinal counting (see K.CC.B.5) and for comparing numbers (see K.CC.C.6). K.MD.B.3 also offers a context in which to decompose 10 in more than one way (see K.OA.A.3).
- K.G.A.2 and K.G.B.4 offer some opportunities for counting and comparing numbers.

1 Material adapted from National Research Council. Mathematics Learning in Early Childhood: Paths Toward Excellence and Equity (Washington, DC: The National Academies Press, 2009), p. 138.