

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 6

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 majority¹ of their time on the major work of the grade.²

■ Major Clusters ■ Supporting Clusters ○ Additional Clusters

6.RP.A	■ Understand ratio concepts and use ratio reasoning to solve problems.
6.NS.A	■ Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
6.NS.B	○ Compute fluently with multi-digit numbers and find common factors and multiples.
6.NS.C	■ Apply and extend previous understandings of numbers to the system of rational numbers.
6.EE.A	■ Apply and extend previous understandings of arithmetic to algebraic expressions.
6.EE.B	■ Reason about and solve one-variable equations and inequalities.
6.EE.C	■ Represent and analyze quantitative relationships between dependent and independent variables.
6.G.A	■ Solve real-world and mathematical problems involving area, surface area, and volume.
6.SP.A	○ Develop understanding of statistical variability.
6.SP.B	○ Summarize and describe distributions.

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 6

6.NS.B.2	Multi-digit division
6.NS.B.2	Multi-digit decimal operations

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 GRADE 5 TO GRADE 6

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' prior understanding of and skill with multiplication, division, and fractions contribute to their study of ratios, proportional relationships and unit rates (6.RP).
- Students begin using properties of operations systematically to work with variables, variable expressions, and equations (6.EE).
- Students extend their work with the system of rational numbers to include using positive and negative numbers to describe quantities (6.NS.C.5), extending the number line and coordinate plane to represent rational numbers and ordered pairs (6.NS.C.6), and understanding ordering and absolute value of rational numbers (6.NS.C.7).
- Having worked with measurement data in previous grades, students begin to develop notions of statistical variability, summarizing and describing distributions (6.SP).

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.

6.NS.B.2 Students fluently divide multidigit numbers using the standard algorithm. This is the culminating standard for several years' worth of work with division of whole numbers.

6.NS.B.3 Students fluently add, subtract, multiply, and divide multidigit decimals using the standard algorithm for each operation. This is the culminating standard for several years' worth of work relating to the domains of Number and Operations in Base Ten, Operations and Algebraic Thinking, and Number and Operations — Fractions.

6.NS.A.1 Students interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions. This completes the extension of operations to fractions.

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.)

- Equations of the form $px = q$ (6.EE.B.7) are unknown-factor problems; the solution will sometimes be the quotient of a fraction by a fraction (6.NS.A.1).
- Solving problems by writing and solving equations (6.EE.B.7) involves not only an appreciation of how variables are used (6.EE.B.6) and what it means to solve an equation (6.EE.B.5) but also some ability to write, read, and evaluate expressions in which letters stand for numbers (6.EE.A.2).
- Students must be able to place rational numbers on a number line (6.NS.C.7) before they can place ordered pairs of rational numbers on a coordinate plane (6.NS.C.8). The former standard about ordering rational numbers is much more fundamental.

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.

- Students' work with ratios and proportional relationships (6.RP) can be combined with their work in representing quantitative relationships between dependent and independent variables (6.EE.C.9).
- Plotting rational numbers in the coordinate plane (6.NS.C.8) is part of analyzing proportional relationships (6.RP.A.3a, 7.RP.A.2) and will become important for studying linear equations (8.EE.C.8) and graphs of functions (8.F).
- Students use their skill in recognizing common factors (6.NS.B.4) to rewrite expressions (6.EE.A.3).
- Writing, reading, evaluating, and transforming variable expressions (6.EE.A.1-4) and solving equations and inequalities (6.EE.B.7-8) can be combined with use of the volume formulas $V = lwh$ and $V = Bh$ (6.G.A.2).
- Working with data sets can connect to estimation and mental computation. For example, in a situation where there are 20 different numbers that are all between 8 and 10, one might quickly estimate the sum of the numbers as $9 \times 20 = 180$.