



Diocese of Baton Rouge

Mathematics Learning Standards

Structure, Coding, and Progressions

The Role of Standards in Establishing Key Student Skills and Mathematical Proficiency

Students are ready for college or a career if they are able to meet college and workplace expectations without needing remediation in mathematics skills and concepts. The learning standards define what Diocese of Baton Rouge students should know, understand, and be able to do mathematically and represent the steps students must take along the way to meet this goal.

For example, all students should be able to recall and use math skills and concepts on a daily basis. That is, a student should know certain math facts and concepts such as how to add, subtract, multiply, and divide basic numbers with ease, how to work with simple fractions and percentages, and how to apply basic algebra and geometry principles. Additionally, students need to be able to reason mathematically, communicate with others about math through speaking and writing, and problem solve in real-world situations to be prepared mathematically for post-secondary education or to pursue a career.

The Diocese of Baton Rouge K-12 mathematics learning standards lay the foundation that allows students to become mathematically proficient by focusing on conceptual understanding, procedural skill and fluency, and application.

- **Conceptual understanding** refers to understanding mathematical concepts, operations, and relations. It is more than knowing isolated facts and methods. Students should be able to make sense of why a mathematical idea is important and the kinds of contexts in which it is useful. It also allows students to connect prior knowledge to new ideas and concepts.
- **Procedural skill and fluency** is the ability to apply procedures accurately, efficiently, and flexibly. It requires speed and accuracy in calculation while giving students opportunities to practice basic skills. Students' understanding of more complex concepts and procedures is dependent on procedural skill and fluency.
- **Application** provides a valuable context for learning and the opportunity to solve problems in a relevant and a meaningful way. It is through real-world application that students learn to select an efficient method to find a solution, determine whether the solution(s) makes sense by reasoning, and develop critical thinking skills.

Structure of the Mathematics Learning Standards

There are two types of standards in the Diocese of Baton Rouge Mathematics Learning Standards – mathematical practice and content. A summary of each type is provided below:

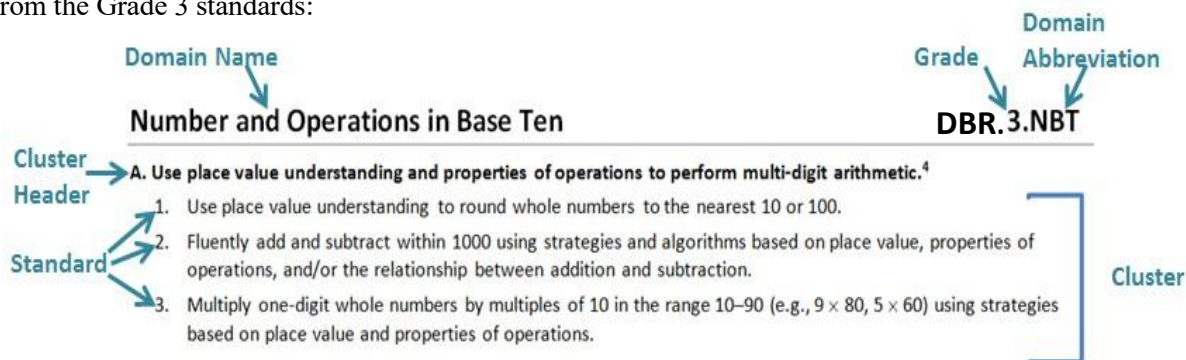
1. Standards for Mathematical Practice
 - Apply to all grade levels
 - Describe mathematically proficient students
2. Standards for Mathematical Content
 - K-8 standards presented by grade level
 - High school standards presented by high school course (Algebra I, Geometry, Algebra II), then organized by conceptual categories:
 - *Number and Quantity*
 - *Algebra*
 - *Functions*
 - *Modeling*
 - *Geometry*
 - *Statistics and Probability*

The following terms will assist in understanding how to read the content standards and their codes. Terms are defined in order from most specific to most general.

- **Standards** - Statements of what a student should know, understand, and be able to do.
- **Clusters** - Groups of **related** standards. Cluster headings may be considered as the big idea(s) that the group of standards they represent are addressing. Cluster headings are therefore useful as a quick summary of the progression of ideas that the standards in a domain are covering and can help teachers to determine the focus of the standards they are teaching.
- **Domains** - A **large** category of mathematics that the clusters and their respective content standards delineate and address. For example, *Number and Operations – Fractions* is a domain under which there are a number of clusters (the big ideas that will be addressed) along with their respective content standards, which give the specifics of what the student should know, understand, and be able to do when working with fractions.
- **Conceptual Categories** – The content standards, clusters, and domains in Algebra I, Geometry, and Algebra II are further organized under conceptual categories. These are very broad categories of mathematical thought and lend themselves to the organization of high school course work. For example, Algebra is a conceptual category in the high school standards under which are domains such as Seeing Structure in Expressions, Creating Equations, Arithmetic with Polynomials and Rational Expressions, etc.

Reading and Interpreting the Math Learning Standards and their Codes in Grades K-8

Example from the Grade 3 standards:



The Diocese of Baton Rouge Learning Standard codes for Kindergarten through Grade 8 Mathematics consist of five parts. Each standard code begins with DBR, which represents Diocese of Baton Rouge. The Cluster Headers are identified by an uppercase letter (A, B, C...). If a Domain has four clusters, then the letter A is assigned to the heading for the first cluster, B to the second, C to the third, and D to the fourth cluster. Each part of the code is separated by a period and has a specific meaning:



Look at the example below. It is the code for the last Grade 3 standard in the above list.

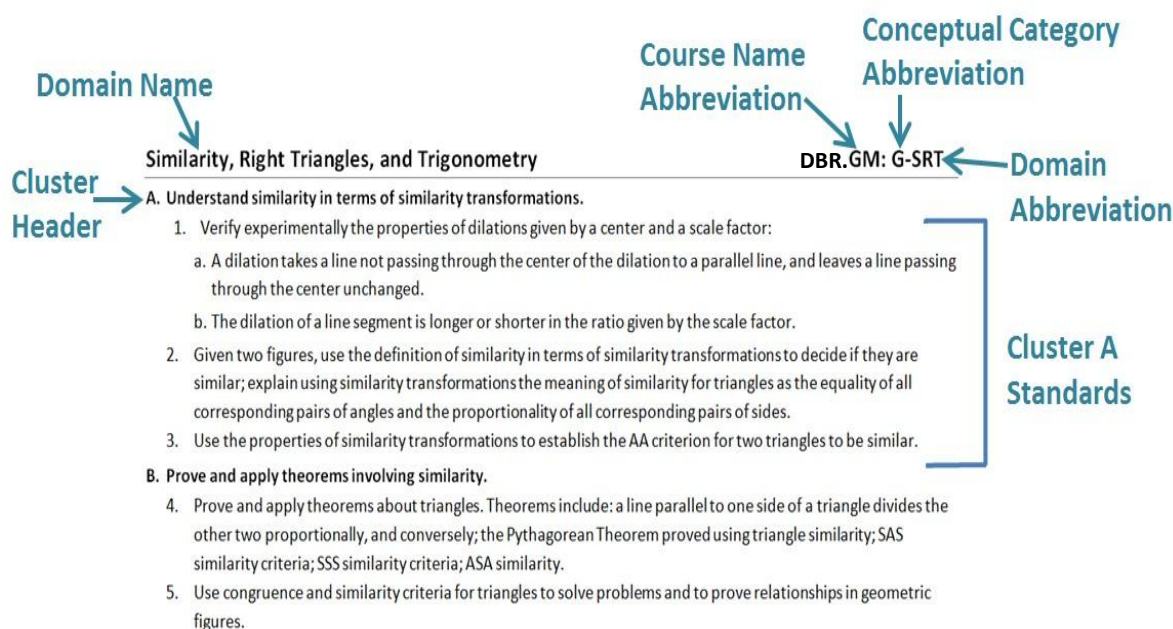
DBR.3.NBT.A.3

The grade level is 3, the domain code is NBT (Numbers and Operations in Base Ten), the cluster is A (first cluster), and the standard number is 3. The text of standard DBR.3.NBT.A.3 is provided below.

DBR.3.NBT.A.3. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Reading and Interpreting the Math Learning Standards and Interpreting their Codes in High School Courses

The codes for standards in high school math courses have six parts. An excerpt of the standards for the high school Geometry course as displayed in this document is shown below.



As indicated in the excerpt, the abbreviation used for the high school Geometry course is GM. The abbreviations used for Algebra I and Algebra II are A1 and A2, respectively. The course name abbreviation is followed by abbreviations for the Conceptual Category and the Domain, the letter of the Cluster Header, and then the standard number. High school Conceptual Categories and their abbreviations are located in the table on the next page ([Progressions](#)).

The code for standard 5 in the list above is **DBR.GM: G-SRT.B.5** with the meaning of each part noted in the graphic below.



Progressions in the Math Learning Standards

The standards for each grade should not be considered a checklist or taught in isolation. There is a flow or progression that creates coherence within a grade and from one grade to the next. The progressions are organized using domains in grades K -8 and conceptual categories in high school. The color-coded table shows the domains, categories, and their abbreviations, and identifies the five progressions present in the Diocese of Baton Rouge Learning Standards for Mathematics. Each of the progressions begins in Kindergarten and indicates a constant movement toward the high school standards.

Progressions guarantee a steady, age-appropriate development of each topic and also ensure that gaps are not created in the mathematical education of the Diocese of Baton Rouge's students. The table is designed to allow teachers to see the coherence and connections among the mathematical topics in the standards.

Kindergarten	1	2	3	4	5	6	7	8	High School
Domains and Abbreviations									Categories and Abbreviations
Counting and Cardinality (CC)									Number and Quantity (N)
Numbers and Operations in Base Ten (NBT)					Ratios and Proportional Relationships				
			Number and Operations – Fractions (NF)		The Number System (NS)				
Operations and Algebraic Thinking (OA)					Expressions and Equations (EE)		Algebra (A)		
							Functions (F)	Functions (F)	
Geometry (G)					Geometry (G)			Geometry (G)	
Measurement and Data (MD)					Statistics and Probability (SP)			Statistics and Probability (S)	