Louisiana Standards Review
3-12 Math Subcommittee Meeting

October15, 2015

Welcome

- Committee members
- Educators, parents and interested stakeholders
- Department of Education and BESE staff
- Elected officials

Meeting Objective

- By the end of today's meeting, content committee members will generate a preliminary draft of the 3-12 math standards for consideration by the Standards Committee on November 12.

- This preliminary draft should include:
  - Any specific change (revision, deletion, addition)
  - Rationale for the change
  - Edits needed to other standards (across and within grades) that result from the recommended change

Agenda

- Welcome
- Overview of Louisiana Student Standards and Steps for Committee Work
- Small Group Work
- Lunch
- Whole Committee Work
- Public Comment

Meeting Procedures

- **Public meetings:** All meetings will be advertised, will be open to the public, and will be held pursuant to the Louisiana Open Meetings Law.
- **Public comment at meetings:** Public comment will be received during each meeting and prior to any votes. Members of the public may also submit written comments for the record.
- **Working Groups:** We will work collaboratively through this work, we expect active participation and discussion throughout the process.
- **Content of public comment:** All public comment must relate to the review and development of standards, not other matters of policy.
- **Committee leadership:** Each committee and subcommittee will be facilitated by a chairman.
- **Voting:** Subcommittee members will work together to finalize any recommended revisions or additions to standards. Votes will then be taken as a slate, not by individual standard or edit, to move proposed standards forward to the committee and to BESE.
- **Voting proxies:** No proxies will be allowed for voting purposes. Participants must be in attendance to vote.
- **Legislative liaisons:** Appointed legislative liaisons will attend all meetings and report back to the Legislature.
- **Minutes:** Minutes from each meeting will be submitted to the legislature and videos, where available, will be posted to the LDE's website.

Overview of the Louisiana Student Standards

The Louisiana Student Standards

The Louisiana Student Standards are statements that:

- Define **what** a student should know or be able to accomplish at the end of a specific time period or grade level or completion of a course.
- Represent the knowledge and skills needed for students to successfully transition to postsecondary education and the workplace.
- Serve as the basis for state assessments that
  - Set student achievement standards consistent with students nationally.
  - Provide questions comparable to national achievement tests, including but not limited to the National Assessment of Educational Progress.
- Allow local districts, schools, and teachers to develop and implement curriculum, content and methodology for required subjects.

How Standards Connect

- The standards build on skills learned in previous years and avoid repetition from year to year.

- Standards connect **across grades** and **within each grade.**

These progressions are important because:

- Students build new understanding on foundations built in previous years.
- Students have time to develop solid conceptual understanding of content and build on it.
- Each standard is not a new event, but an extension of previous learning.

Three Key Features of a Quality Standard

Does	Does NOT
1. Identify key knowledge and skills that *students* should demonstrate by the end of the year	• Focus on *teacher* actions or what *teachers* should do to teach that content • Require specific instructional strategies, approaches, curricula or text to be used ("e.g." or "such as" indicate an example, not a requirement) • Omit critical content
2. Connect learning within and across grade levels	• Include unnecessarily repetitive standards • Create contradictions within a grade or with standards in other grades • Create gaps in the progression of learning within or across grades
3. Use clear language that clarifies for educators what students should be able to do at the end of a particular grade.	• Use ambiguous or vague language

Practice Session

Revising Louisiana Student Standards for Mathematics while Maintaining Quality

Quality Standard Criteria 1

- **Criteria:** Identify key student knowledge and skills that students should demonstrate by the end of the year.
  - Does *not* omit critical content

- **Original standard:** Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. (7.NS.A.2d)

Proposed revision	Issue
Convert a rational number to a decimal using long division. Critical content removed: Knowing that a rational number represented as a decimal terminates in 0 or eventually repeats is a property of rational numbers.	Omits critical knowledge

Quality Standard Criteria 1

- **Criteria:** Identify key student knowledge and skills that students should demonstrate by the end of the year.
  - Does not require specific instructional strategies, approaches, curricula or text to be used ("e.g." or "such as" indicate an example, not a requirement)

- **Original standard**: Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison (4.OA.A.2)

Proposed revision	Issue
Use drawings and equations with a symbol to represent an unknown number to solve word problems involving multiplicative comparison. Distinguish multiplicative comparison from additive comparison.	Using drawings and equations to solve such problems is now required of the student.

Quality Standard Criteria 2

- **Criteria:** Quality standards connect learning within and **across** grade levels.
  - Does *not* create gaps in the progression of learning within or across grades

- **Original standard:** 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, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (5.NBT.B.6)

Proposed revision	Issue
Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	The mathematical content is not supported by understanding place value, properties of operations and inverse relationships which will create gaps in students' knowledge in 5th grade and beyond.

Quality Standard Criteria 2

- **Criteria:** Quality standards connect learning within and **across** grade levels.
  - Does *not* create gaps in the progression of learning within or across grades

- Original standard: Fluently divide multi-digit numbers using the standard algorithm. (6.NS.B.2)

Proposed revision	Issue
Replace 5.NBT.B.6 with 6.NS.B.2 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, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	The learning progression for division relies strategies that begin to connect place value, properties of operations, relationship between x and ÷ to the algorithm. • Grade 4 – 1 digit divisors • Grade 5 – 2 digit divisors with students illustrating and explaining their understanding. • Grade 6 – students master the division algorithm based on understandings from Grades 4 and 5.

Sample Standard Feedback

Original Standard	Proposed Revision
A-REI.B.4b: Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	• **Algebra I –A-REI.B.4b:** Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write the solution as "no real solution." • **Algebra II –A-REI.B.4b :** Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.
6.NS.B.4: Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.

Questions to Discuss

- Is the edit necessary? (Is there a valid rationale for making the edit?)
- Does the proposed wording of a revised standard meet the five qualities of a quality standard?
  1. Identify the student knowledge and skills to be demonstrated by the end of the year
  2. Connect learning within and across grade levels
  3. Do not **require** specific instructional strategies/approach/ curriculum/text to be used
  4. Avoid contradictions and/or unnecessary repetition
  5. Avoid ambiguous or vague language
- Do the proposed edits maintain connections within and across grades? If not, what standards are impacted?

Committee Small Group Work Time

Objective: Discuss your grade level's compiled feedback, come to a consensus and submit final written revisions to share with the rest of the content subcommittee.

Time Limit: 2 hours

- Sit with other members of your content committee who were assigned to review the same grade and content
- Review the compiled feedback on standards submitted by members of your grade-level group
  - Use the criteria for a quality standard and the discussion questions to evaluate each suggested revision
- Come to consensus on which revisions should be referred to the entire subcommittee
- Record your group's final proposed revisions in the blank feedback form provided on your USB drive.
  - Your form should include final language for any standard that you propose changing or any standards that would be impacted by your edits as well as your rationale for each revision.
- Email your form to charlotte.boothe@rpsb.us and LouisianaStandards@la.gov.

Lunch

Committee Whole Group Work Time

Objective: Generate a preliminary draft of the 3-12 math standards for consideration by the Standards Committee on November 12.

Time Limit: 2 Hours

- Indicate which standard(s) you would like to discuss as a whole group.

Public Comment