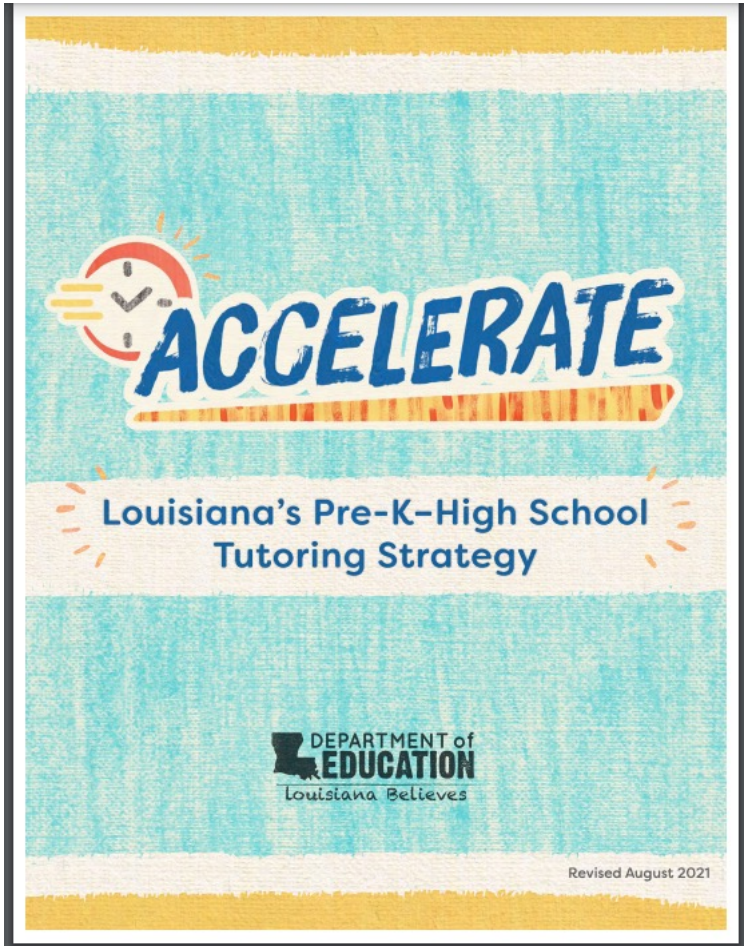
LDOE: Acceleration in Mathematics

Planning to Address Unfinished Math Learning
Part 1

Asynchronous Professional Learning Series

Accelerate Initiative: Vision

All students can achieve high expectations regardless of their background, family income, or zip code.



Community Agreements

Come as you are

Learning is iterative

Embrace the pause

Learning Outcomes

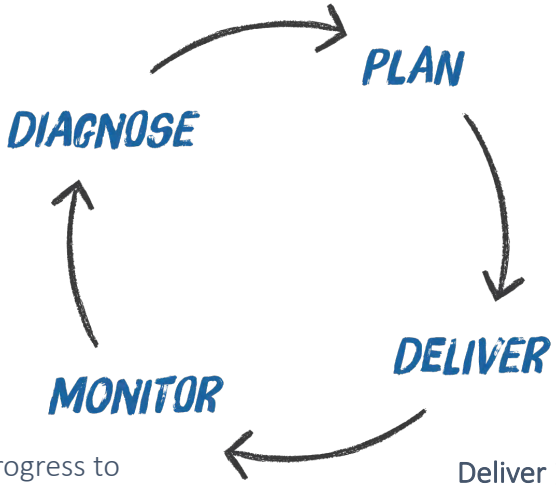
Through today's asynchronous learning, participants will:

- Explore how the Math Planning Guide can support teachers in engaging in collaborative conversations around planning to accelerate students towards on-grade level content in the mathematics classroom.
- Identify practical next steps that will lead to sustainable change and impact student achievement.

Acceleration in Mathematics

Diagnose students' unfinished learning of the prerequisite content and skills.

Plan for timing and content for acceleration support for all students.



Monitor progress to adjust supports based on student performance.

Deliver just-in-time, curriculum-aligned support.

"Acceleration is accomplished when teachers focus on looking forward through the provision of **just-in-time** supports that ensure readiness to engage with grade-level content by building knowledge and **connecting** it to skills in current lessons. When teachers accelerate learning, they diagnose where students are on their path to mastery and put students on a **fast track to accessing on-grade-level content** instead of delaying it through remediation."

Math Planning Guide Preview

How does this guide support teachers in planning for acceleration in the mathematics classroom?

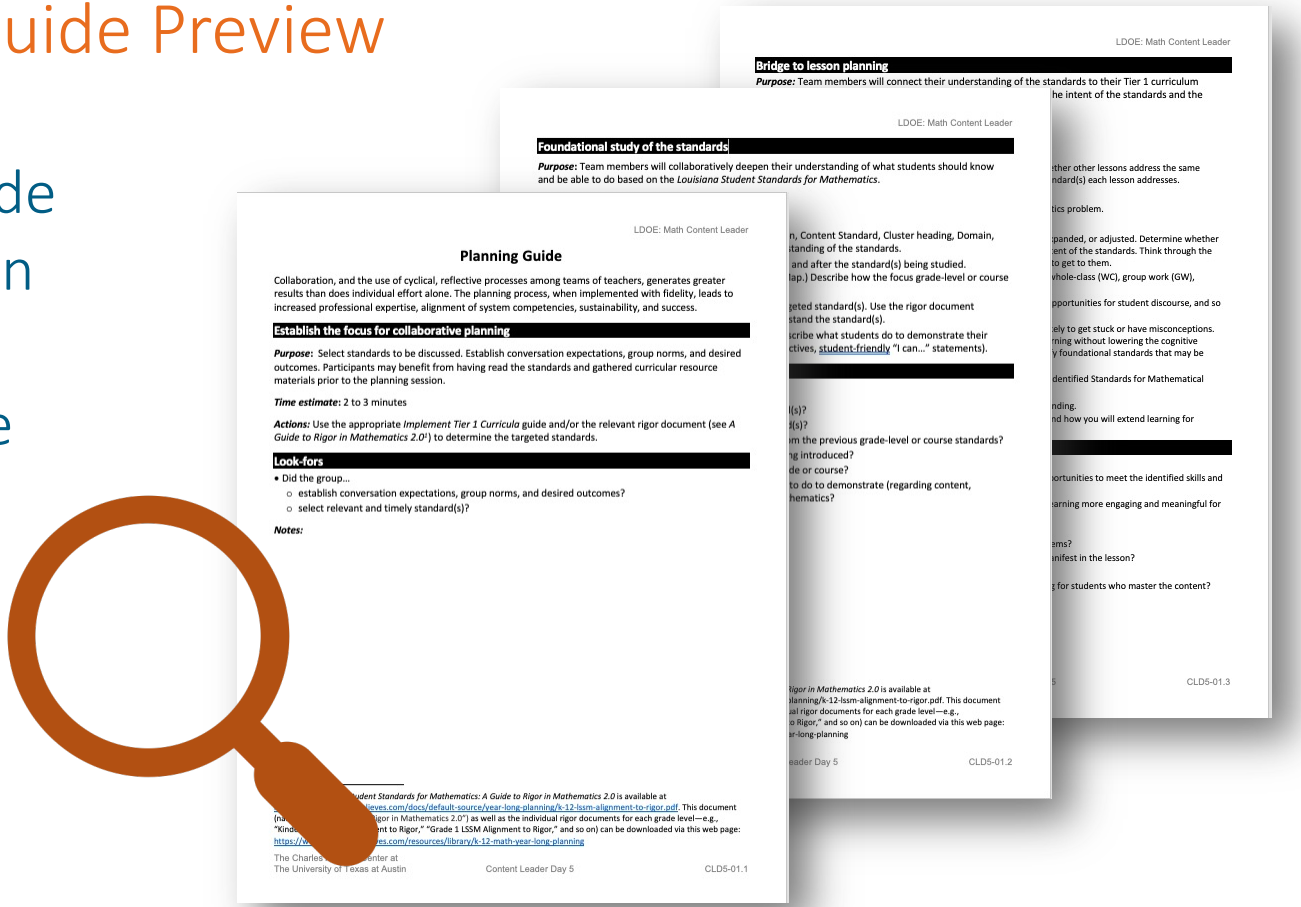


Image credits: Microsoft Office icons

Establish the Focus for Collaborative Planning

LDOE: Math Content Leader

Planning Guide

Collaboration, and the use of cyclical, reflective processes among teams of teachers, generates greater results than does individual effort alone. The planning process, when implemented with fidelity, leads to increased professional expertise, alignment of system competencies, sustainability, and success.

Establish the focus for collaborative planning

***Purpose*:** Select standards to be discussed. Establish conversation expectations, group norms, and desired outcomes. Participants may benefit from having read the standards and gathered curricular resource materials prior to the planning session.

***Time estimate*:** 2 to 3 minutes

Actions: Use the appropriate *Implement Tier 1 Curricula* guide and/or the relevant rigor document (see *A Guide to Rigor in Mathematics 2.0*[1]) to determine the targeted standards.

Look-fors

- Did the group…
  - establish conversation expectations, group norms, and desired outcomes?
  - select relevant and timely standard(s)?

Notes:

Establish the Focus for Collaborative Planning

Establish the Focus for Collaborative Planning

Look-fors

- Did the group…
  - establish conversation expectations, group norms, and desired outcomes?
  - select relevant and timely standard(s)?

Notes:

Establish the Focus for Collaborative Planning

Reflection Questions

- Why is it important to take the time to establish the focus at the start of each math PLC or planning session?
- How were the standards that will be discussed identified?
- What norms would be most beneficial to set the stage for productive shared learning in your PLCs or planning sessions?

Foundational Study of the Standards

LDOE: Math Content Leader

Foundational study of the standards

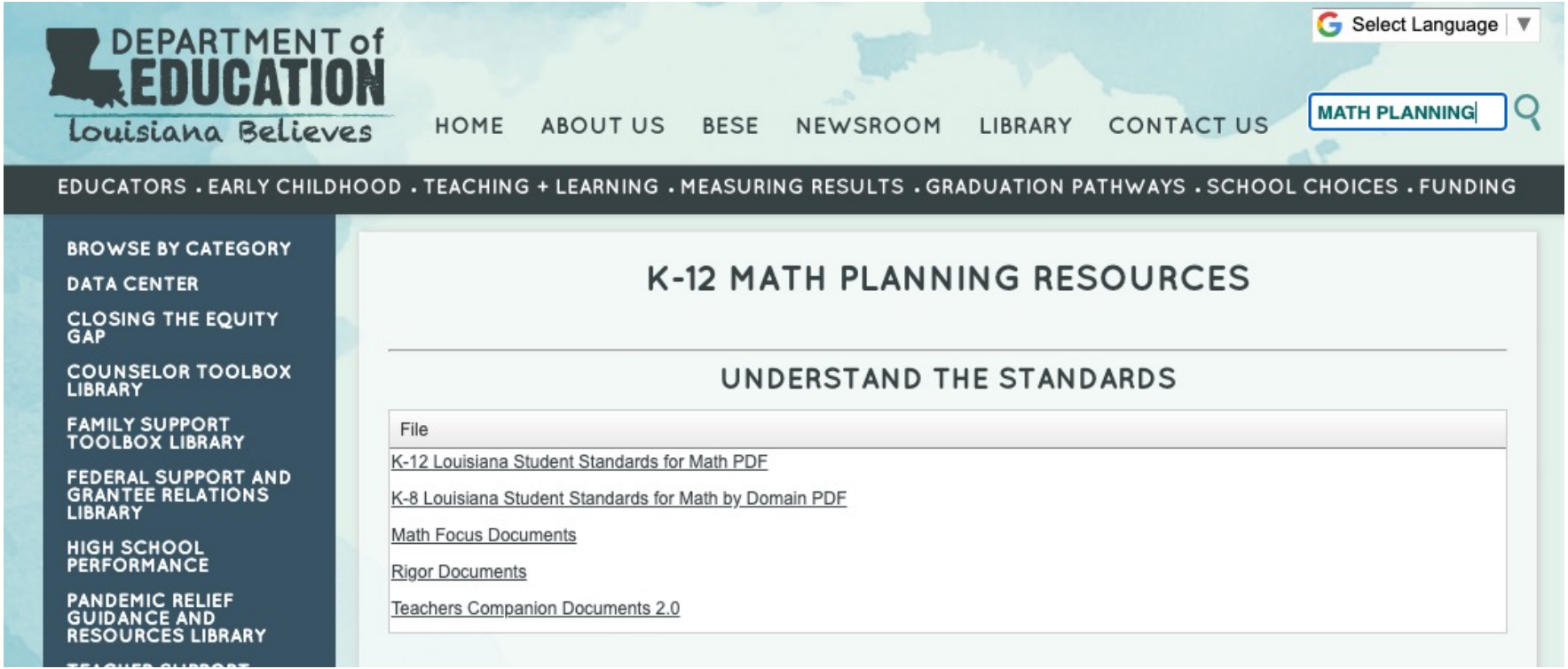
***Purpose*:** Team members will collaboratively deepen their understanding of what students should know and be able to do based on the *Louisiana Student Standards for Mathematics*.

Time estimate: 10 to 15 minutes

Process

- Analyze the targeted standard(s)—examine Introduction, Content Standard, Cluster heading, Domain, and Conceptual Category—to ensure a common understanding of the standards.
- Identify related standards in the grades/courses before and after the standard(s) being studied. (Tip: use the LSSM Acceleration Guides or Coherence Map.) Describe how the focus grade-level or course standards differ from the adjacent standards.
- Describe the components of rigor addressed by the targeted standard(s). Use the rigor document (*A Guide to Rigor in Mathematics 2.0*[2]) to better understand the standard(s).
- Develop clear, specific, measurable statements that describe what students do to demonstrate their knowledge. (e.g., success criteria, learning targets/objectives, student-friendly "I can…" statements).

https://www.louisianabelieves.com/resources/library/k-12-math-year-long-planning

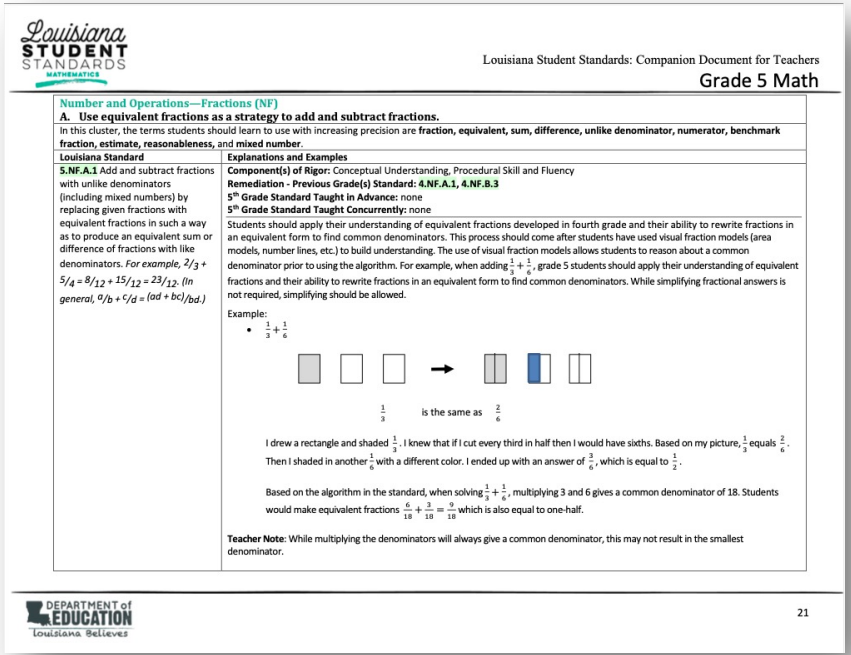


Analyze the Targeted Standard

Examine the Introduction, Content Standard, Cluster Heading, Domain, and Conceptual Category

- Teacher Companion Documents 2.0

5.NF.A.1



Louisiana STUDENT STANDARDS MATHEMATICS

Louisiana Student Standards: Companion Document for Teachers
Grade 5 Math

Number and Operations—Fractions (NF)
A. Use equivalent fractions as a strategy to add and subtract fractions.

In this cluster, the terms students should learn to use with increasing precision are **fraction, equivalent, sum, difference, unlike denominator, numerator, benchmark fraction, estimate, reasonableness,** and **mixed number**.

Louisiana Standard	Explanations and Examples
5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example,* $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. *(In general,* $a/b + c/d = (ad + bc)/bd$.*)*	**Component(s) of Rigor:** Conceptual Understanding, Procedural Skill and Fluency **Remediation - Previous Grade(s) Standard: 4.NF.A.1, 4.NF.B.3** **5th Grade Standard Taught in Advance:** none **5th Grade Standard Taught Concurrently:** none Students should apply their understanding of equivalent fractions developed in fourth grade and their ability to rewrite fractions in an equivalent form to find common denominators. This process should come after students have used visual fraction models (area models, number lines, etc.) to build understanding. The use of visual fraction models allows students to reason about a common denominator prior to using the algorithm. For example, when adding $\frac{1}{3} + \frac{1}{6}$, grade 5 students should apply their understanding of equivalent fractions and their ability to rewrite fractions in an equivalent form to find common denominators. While simplifying fractional answers is not required, simplifying should be allowed. Example: • $\frac{1}{3} + \frac{1}{6}$ $\frac{1}{3}$ is the same as $\frac{2}{6}$ I drew a rectangle and shaded $\frac{1}{3}$. I knew that if I cut every third in half then I would have sixths. Based on my picture, $\frac{1}{3}$ equals $\frac{2}{6}$. Then I shaded in another $\frac{1}{6}$ with a different color. I ended up with an answer of $\frac{3}{6}$, which is equal to $\frac{1}{2}$. Based on the algorithm in the standard, when solving $\frac{1}{3} + \frac{1}{6}$, multiplying 3 and 6 gives a common denominator of 18. Students would make equivalent fractions $\frac{6}{18} + \frac{3}{18} = \frac{9}{18}$ which is also equal to one-half. **Teacher Note**: While multiplying the denominators will always give a common denominator, this may not result in the smallest denominator.

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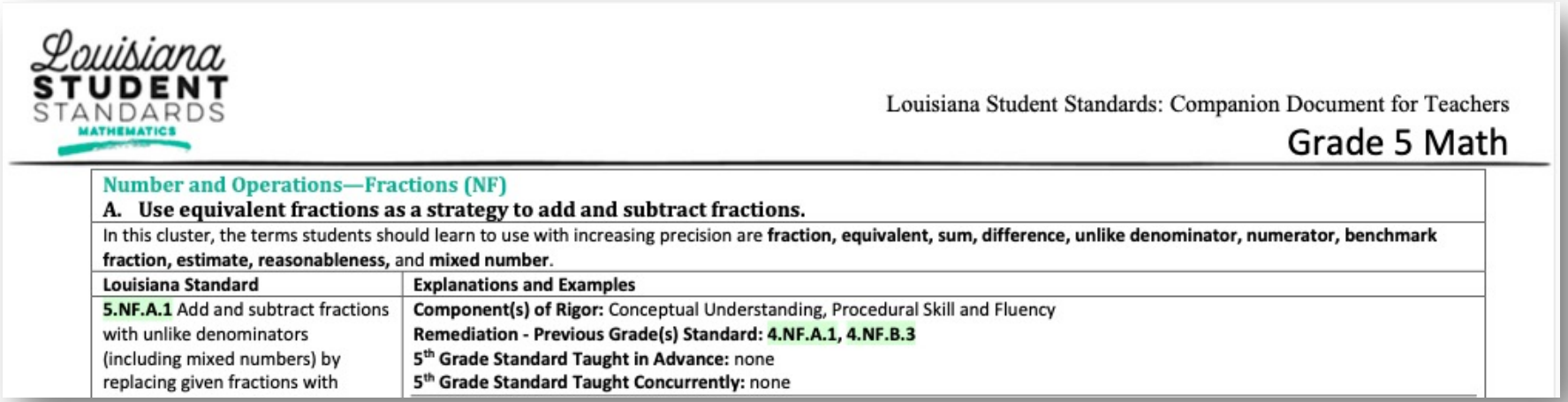
Identify Related Standards

…in the grades/courses before and after the target standard. Describe how they differ.

- Teacher Companion Documents 2.0



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Identify Related Standards

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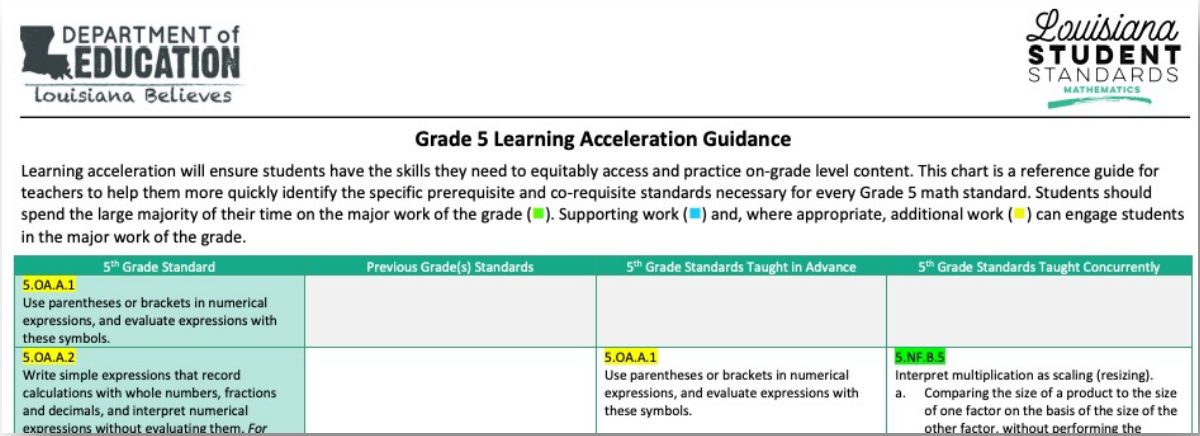
- Teacher Companion Documents 2.0
- LSSM Acceleration Guidance



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Louisiana STUDENT STANDARDS MATHEMATICS

Grade 5 Learning Acceleration Guidance

Learning acceleration will ensure students have the skills they need to equitably access and practice on-grade level content. This chart is a reference guide for teachers to help them more quickly identify the specific prerequisite and co-requisite standards necessary for every Grade 5 math standard. Students should spend the large majority of their time on the major work of the grade (■). Supporting work (■) and, where appropriate, additional work (■) can engage students in the major work of the grade.

5th Grade Standard	Previous Grade(s) Standards	5th Grade Standards Taught in Advance	5th Grade Standards Taught Concurrently
5.OA.A.1 Use parentheses or brackets in numerical expressions, and evaluate expressions with these symbols.			
5.OA.A.2 Write simple expressions that record calculations with whole numbers, fractions and decimals, and interpret numerical expressions without evaluating them. *For*		5.OA.A.1 Use parentheses or brackets in numerical expressions, and evaluate expressions with these symbols.	5.NF.B.5 Interpret multiplication as scaling (resizing). a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the

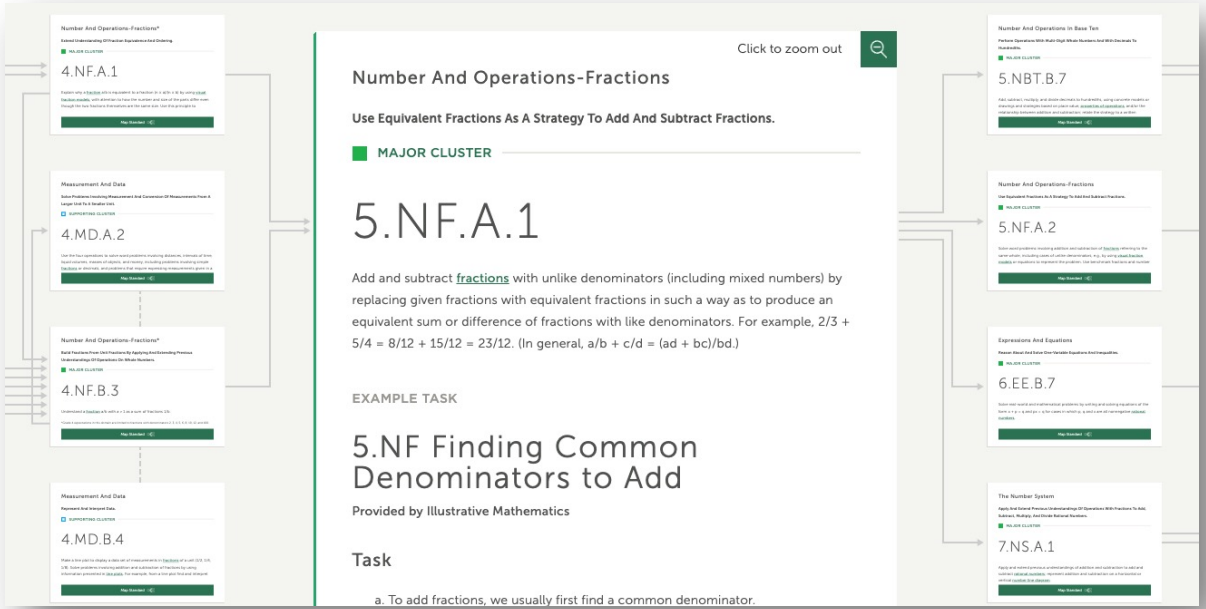
Identify Related Standards

…in the grades/courses before and after the target standard. Describe how they differ.

- Teacher Companion Documents
- LSSM Acceleration Guidance
- Coherence Map

https://achievethecore.org/coherence-map/

5.NF.A.1



Components of Rigor and Instructional Implications

- Teacher Companion Documents 2.0

Louisiana STUDENT STANDARDS MATHEMATICS

Louisiana Student Standards: Companion Document for Teachers

Grade 5 Math

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5.NF.A.1

Components of Rigor and Instructional Implications

- Teacher Companion Documents 2.0
- A Guide to Rigor in the Mathematics Classroom/Rigor Documents

Louisiana STUDENT STANDARDS MATHEMATICS

Grade 5 Guide to Rigor

LSSM – 5th Grade		Explicit Component(s) of Rigor		
Code	**Standard**	**Conceptual Understanding**	**Procedural Skill and Fluency**	**Application**
5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; justify the reasoning used with a written explanation.	✔	✔	
5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*	✔	✔	
5.NF.A.2	Solve word problems involving addition and subtraction of fractions.			✔
5.NF.A.2a	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.			✔

Foundational Study of the Standards

Look-fors

- Did the group…
  - Determine key learning expected from the standard(s)?
  - Identify specific strategies called for by the standard(s)?
  - Identify expected prerequisite skills or strategies from the previous grade-level or course standards?
  - Determine new strategies, skills, or key content being introduced?
  - Identify strategies or skills being finalized in this grade or course?
  - Determine what students should know and be able to do to demonstrate (regarding content, practices, and rigor) that they have learned the mathematics?

How does the team's foundational study of the standard align with the preplanning you did for standard 5.NF.A.1?

Foundational Study of the Standards

Foundational Study of the Standards

Reflection Questions

- What are the benefits of engaging in a foundational study of the standards as a team prior to planning daily lessons?
- How does a team foundational study of the standards support teachers in accelerating students and providing just-in-time support?
- Why is it important for an accelerate tutor to participate in these conversations?

Bridge to Lesson Planning

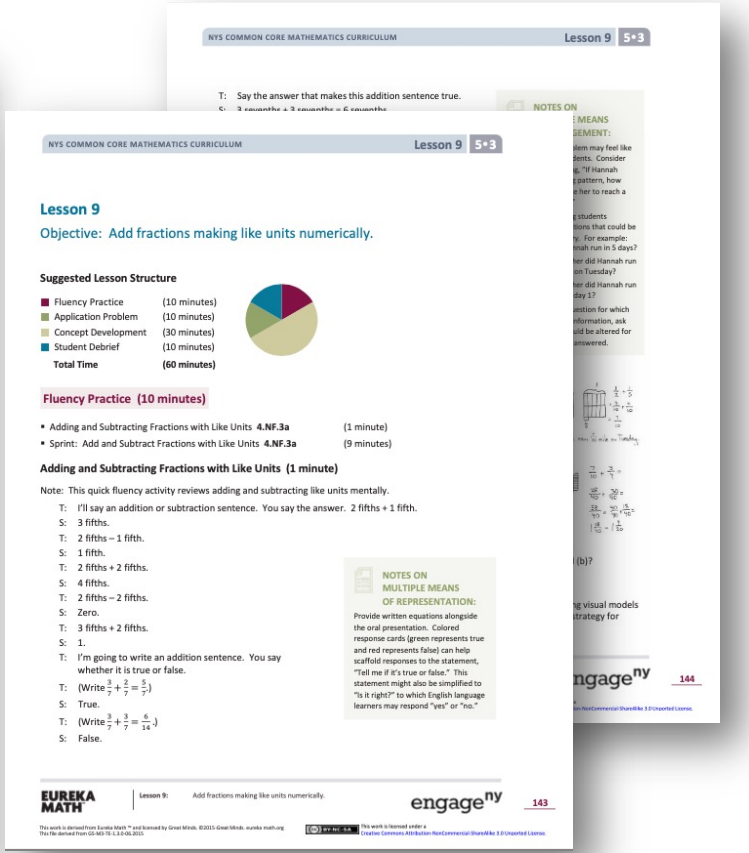
Bridge to lesson planning

Purpose: Team members will connect their understanding of the standards to their Tier 1 curriculum resources so they can make instructional decisions that best meet the intent of the standards and the needs of all students.

Time estimate: 20 to 30 minutes

Process

- Choose appropriate lesson(s).
  - Use the appropriate *Implement Tier 1 Curricula* guide to identify whether other lessons address the same standard(s). Preview these lessons to clarify which aspects of the standard(s) each lesson addresses.
- Study the lesson(s).
  - Review all components of the lesson. Work through every mathematics problem.
- Annotate the lesson(s).
  - Determine what problems or sets of problems should be omitted, expanded, or adjusted. Determine whether instructions for problem sets require revisions to better meet the intent of the standards. Think through the correct answers and some of the strategies that students might use to get to them.
  - Determine strategies for instruction for each part of the lesson(s)—whole-class (WC), group work (GW), individual work (IW).
  - Determine instructional moves—appropriate tools, manipulatives, opportunities for student discourse, and so on—needed to ensure student engagement.
  - Think through potential "hot spots," or places where students are likely to get stuck or have misconceptions. Determine a plan to probe student thinking and support student learning without lowering the cognitive demand on the students. Use the *Acceleration Guides* to help identify foundational standards that may be necessary to fill gaps in learning.
  - Determine how the lesson could best be facilitated to bring out the identified Standards for Mathematical Practice (SMPs).
  - Identify opportunities for formative assessment of student understanding.
  - Determine how you will support students with unfinished learning and how you will extend learning for students who master the content.



Bridge to Lesson Planning: Clip 1

As you watch consider…

- Which of the annotations do we hear the team discussing?
- Which of the "look-fors" do they accomplish?

Look-fors

- Did the group…
  - Determine whether the problems in the lesson provide students opportunities to meet the identified skills and strategies necessary to achieve the intent of the standard(s)?
  - Determine instructional strategies and moves needed to make the learning more engaging and meaningful for students?
  - Identify potential student misconceptions?
  - Anticipate possible strategies that students might use to solve problems?
  - Identify how the Standards for Mathematical Practice (SMPs) will manifest in the lesson?
  - Plan to support students with unfinished learning?
  - Plan to increase the complexity, open-endedness, or level of thinking for students who master the content?

Bridge to Lesson Planning: Clip 1

Bridge to Lesson Planning: Clip 1

Reflection Questions

- What is the role of the facilitator?
- How do the established norms support this team in engaging in collaborative conversations?
- How will this conversation help these teachers accelerate students towards on grade-level content?

Bridge to Lesson Planning: Clip 2

As you watch consider…

- What do you notice about the tone of the conversation?
- Which of the "look-fors" do you observe?

Look-fors

- Did the group…
  - Determine whether the problems in the lesson provide students opportunities to meet the identified skills and strategies necessary to achieve the intent of the standard(s)?
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Bridge to Lesson Planning: Clip 2

Bridge to Lesson Planning: Clip 2

Reflection Questions

- How do structured planning sessions using the Math Planning Guide surface opportunities for professional growth and development?
- How do these types of conversations support teachers in accelerating students in the math classroom?

Bridge to Lesson Planning: Clip 3

As you watch consider…

- How does the team use discourse as a strategy to overcome "hot spots"?
- Which of the "look-fors" do you observe?

Look-fors

- Did the group…
  - Determine whether the problems in the lesson provide students opportunities to meet the identified skills and strategies necessary to achieve the intent of the standard(s)?
  - Determine instructional strategies and moves needed to make the learning more engaging and meaningful for students?
  - Identify potential student misconceptions?
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  - Plan to support students with unfinished learning?
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Bridge to Lesson Planning: Clip 3

Bridge to Lesson Planning: Clip 3

Reflection Questions

- How did the team use discourse as a strategy to overcome “hot spots”?
- How will this type of conversation help teachers provide just-in-time support to students?

Bridge to Lesson Planning: Clip 4

As you watch consider…

- How does the team ensure high quality math instruction for **all** students?
- What connections can you make between the conversation in this clip and the Acceleration Cycle?
- Which of the "look-fors" do you observe?

Look-fors

- Did the group…
  - Determine whether the problems in the lesson provide students opportunities to meet the identified skills and strategies necessary to achieve the intent of the standard(s)?
  - Determine instructional strategies and moves needed to make the learning more engaging and meaningful for students?
  - Identify potential student misconceptions?
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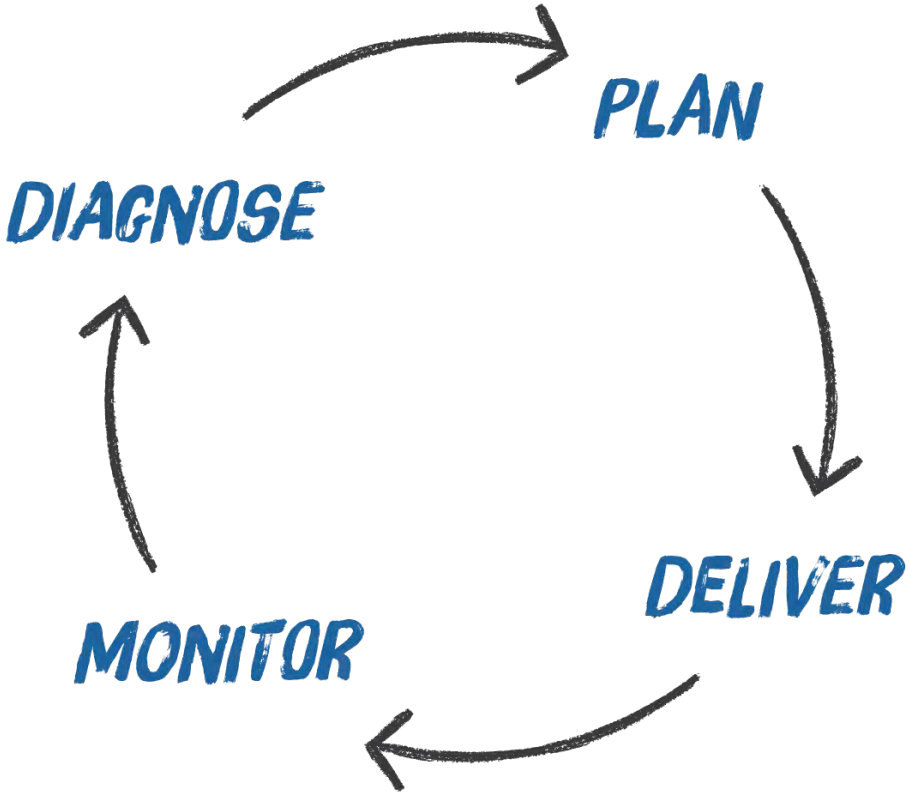
  - Identify how the Standards for Mathematical Practice (SMPs) will manifest in the lesson?
  - Plan to support students with unfinished learning?
  - Plan to increase the complexity, open-endedness, or level of thinking for students who master the content?

Bridge to Lesson Planning: Clip 4

Bridge to Lesson Planning: Clip 4

Reflection Questions

- How does the team ensure high quality math instruction for **all** students?
- What connections can you make between the conversation in this clip and the Acceleration Cycle?



Learning Outcomes

Through today's asynchronous learning, participants will:

- ✓ Explore how the Math Planning Guide can support teachers in engaging in collaborative conversations around planning to accelerate students towards on-grade level content in the mathematics classroom.
- Identify practical next steps that will lead to sustainable change and impact student achievement.

Next Steps…

- Share your knowledge
- Collaborate
- Make a plan
  - Be reasonable
  - Anticipate barriers and identify solutions
  - Adapt as needed
- Ask for help
- Watch “Planning to Address Unfinished Math Learning: Part 2”

Additional Support/Resources

Louisiana Believes

- Accelerate https://www.louisianabelieves.com/academics/accelerate
- Accelerate Math https://www.louisianabelieves.com/docs/default-source/accelerate/accelerate-math.pdf?sfvrsn=433c6618_14
- K-12 Math Planning Resources https://www.louisianabelieves.com/resources/library/k-12-math-year-long-planning

Questions? Comments?
Want to know more?

Contact
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