MATHEMATICS CONTENT MODULES

Module 2: Operations and Algebraic Thinking: Addition and Subtraction of Whole Numbers and Problem Types

Grades K–5

The goal of the initiative

Image credit: Chad Baker / Jason Reed / Ryan McVay / Photodisc / Thinkstock

Improve the quality of instruction in math classrooms by developing deep mathematical content knowledge of teachers and connecting that content knowledge to the practical implementation of a quality curriculum.

Math Content Module 2
Grades K–5

2

Group norms

- Understand that those who work, learn.
- Look for solutions, not blame.
- Focus on systems, not people.
- Recognize that everyone has expertise.
- Be honest.
- Challenge ideas.
- Share talk time.
- Mistakes are expected, respected, and inspected.

Module 2 goals

Participants will

- Engage in a study of the standards related to representing and solving problems in addition and subtraction to see how this idea develops across the grades.
- Identify evidence of the key shifts in the standards and how these key shifts guide decisions about teaching and learning using the EngageNY resources.
- Explore how to make instructional decisions around which problems to use when planning lessons, in order to meet their grade level's expectations regarding the various problem types.
- Investigate how anticipating student responses helps teachers prepare to address misconceptions and to connect student strategies to intended learning.

Math Content Module 2
Grades K–5

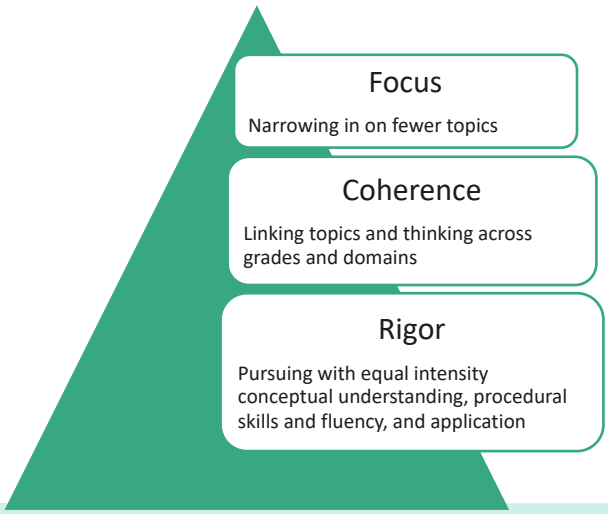
4

MATHEMATICS CONTENT MODULES

Module 2: Operations and Algebraic Thinking: Addition and Subtraction of Whole Numbers and Problem Types
Session 1: Key Shifts in Action—Through an EngageNY lesson

Grades K–5

Key shifts of the Louisiana Student Standards for Mathematics



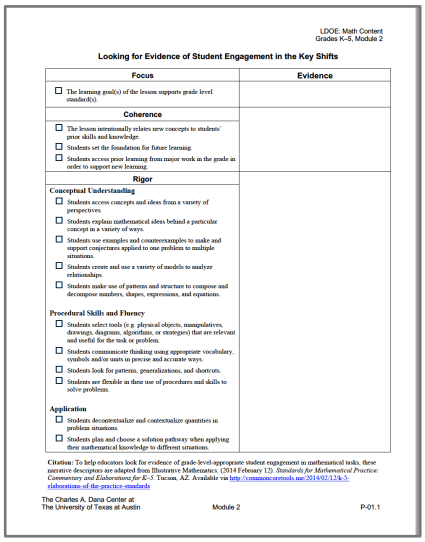
Math Content Module 2, Session 1
Grades K–5

6

Evidence of the key shifts

Use the handout to:

- Check off student behaviors / actions that you observed.
- Record any observations you made that serve as evidence of the key shifts.



LDOE: Math Content
Grades K–5, Module 2

Looking for Evidence of Student Engagement in the Key Shifts

Focus	Evidence
☐ The learning goal(s) of the lesson supports grade level standard(s).	
Coherence	
☐ The lesson intentionally relates new concepts to students' prior skills and knowledge. ☐ Students set the foundation for future learning. ☐ Students access prior learning from major work in the grade in order to support new learning.	
Rigor	
Conceptual Understanding ☐ Students access concepts and ideas from a variety of perspectives. ☐ Students explain mathematical ideas behind a particular concept in a variety of ways. ☐ Students use examples and counterexamples to make and support conjectures applied to one problem to multiple situations. ☐ Students create and use a variety of models to analyze relationships. ☐ Students make use of patterns and structure to compose and decompose numbers, shapes, expressions, and equations. **Procedural Skills and Fluency** ☐ Students select tools (e.g. physical objects, manipulatives, drawings, diagrams, algorithms, or strategies) that are relevant and useful for the task or problem. ☐ Students communicate thinking using appropriate vocabulary, symbols and/or units in precise and accurate ways. ☐ Students look for patterns, generalizations, and shortcuts. ☐ Students are flexible in their use of procedures and skills to solve problems. **Application** ☐ Students decontextualize and contextualize quantities in problem situations. ☐ Students plan and choose a solution pathway when applying their mathematical knowledge to different situations.	

Citation: To help educators look for evidence of grade-level-appropriate student engagement in mathematical tasks, these narrative descriptors are adapted from Illustrative Mathematics. (2014 February 12). *Standards for Mathematical Practice: Commentary and Elaborations for K–5*. Tucson, AZ. Available via http://commoncoretools.me/2014/02/12/k-5-elaborations-of-the-practice-standards

The Charles A. Dana Center at
The University of Texas at Austin Module 2 P-01.1

Math Content Module 2, Session 1
Grades K–5

7

Don has 34 brownies. He bakes 22 more. How many brownies does he have now?

8

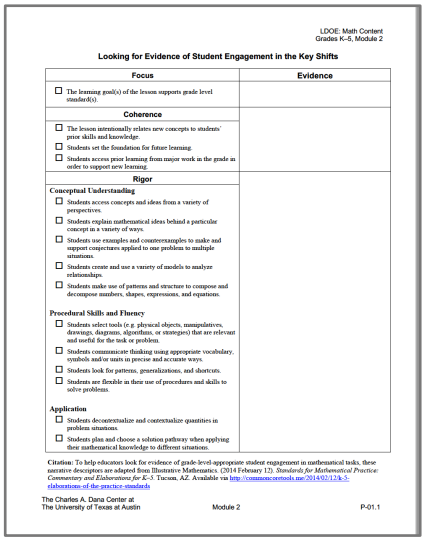
Sam has 46 red apples and some green apples. He has a total of 88 apples. How many green apples does he have?

9

Evidence of the key shifts

Use the handout to:

- Check off student behaviors / actions that you observed.
- Record any observations you made that serve as evidence of the key shifts.



LDOE: Math Content
Grades K–5, Module 2

Looking for Evidence of Student Engagement in the Key Shifts

Focus	Evidence
☐ The learning goal(s) of the lesson supports grade level standard(s).	
Coherence	
☐ The lesson intentionally relates new concepts to students' prior skills and knowledge.	
☐ Students set the foundation for future learning.	
☐ Students access prior learning from major work in the grade in order to support new learning.	
Rigor	
Conceptual Understanding	
☐ Students access concepts and ideas from a variety of perspectives.	
☐ Students explain mathematical ideas behind a particular concept in a variety of ways.	
☐ Students use examples and counterexamples to make and support conjectures applied to one problem to multiple situations.	
☐ Students create and use a variety of models to analyze relationships.	
☐ Students make use of patterns and structure to compose and decompose numbers, shapes, expressions, and equations.	
Procedural Skills and Fluency	
☐ Students select tools (e.g. physical objects, manipulatives, drawings, diagrams, algorithms, or strategies) that are relevant and useful for the task or problem.	
☐ Students communicate thinking using appropriate vocabulary, symbols and/or units in precise and accurate ways.	
☐ Students look for patterns, generalizations, and shortcuts.	
☐ Students are flexible in their use of procedures and skills to solve problems.	
Application	
☐ Students decontextualize and contextualize quantities in problem situations.	
☐ Students plan and choose a solution pathway when applying their mathematical knowledge to different situations.	

Citation: To help educators look for evidence of grade-level-appropriate student engagement in mathematical tasks, these narrative descriptors are adapted from Illustrative Mathematics. (2014 February 12). *Standards for Mathematical Practice: Commentary and Elaborations for K-5*. Tucson, AZ. Available via http://commoncoretools.me/2014/02/12/k-5-elaborations-of-the-practice-standards

The Charles A. Dana Center at
The University of Texas at Austin Module 2 P-01.1

Math Content Module 2, Session 1
Grades K–5

10

Session 1 reflection

Points to Ponder

- How would you describe student engagement in mathematics through the key shifts in this lesson?
- What strategies/teaching moves did the teacher use to foster the intended component of rigor (*application*) in the lesson?
- How did *coherence* manifest within the lesson?

MATHEMATICS CONTENT MODULES

Module 2: Operations and Algebraic Thinking: Addition and Subtraction of Whole Numbers and Problem Types
Session 2: Exploring Coherence in the LSSM

Grades K–5

A Story of Units

"*A Story of Units* tells the unfolding story of mathematics as expressed in the standards—lesson by lesson, throughout each grade and over the student's entire school career. The story draws together what are, at first glance, disparate ideas of different quantities as it emphasizes key themes: the creation and manipulation of, as well as the relationship between units."

— Page 3 in New York State. (2013 July 4). Mathematics Curriculum: Grade P–5: *How to Implement A Story of Units.* 2017 December 11 retrieved from https://www.engageny.org/sites/default/files/resource/attachments/how_to_implement_a_story_of_units.pdf

Math Content Module 2, Session 2
Grades K–5

13

Investigating vertical alignment in the LSSM

As a group…

1. Select a big idea for your group to investigate.
2. Determine what your big idea means.
3. Study one standard at a time. Consider all parts of the standards.
4. For each standard, determine what the student should know and be able to do.

Math Content Module 2, Session 2
Grades K–5

14

Investigating vertical alignment in the LSSM

Represent and solve problems involving addition and subtraction.

Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

Rigor: Application

Add and subtract within 20.

Fluently add and subtract within 20 using mental strategies.[2] By the end of Grade 2, know from memory all sums of two one-digit numbers.

Rigor: Procedural Skill and Fluency

[1] See Glossary, Table 1.
[2] See standard 1.OA.6 for a list of mental strategies.

Investigating vertical alignment in the LSSM

5. As a group, discuss and come to consensus on what order you think these standards should be taught in based on the language and expectations of each standard.
6. Use the standards strips to build a learning trajectory, starting with Kindergarten as the foundation at the bottom and moving up through 5th grade on the top.
7. Check your standards order and make adjustments as necessary, then glue or tape your learning trajectory on chart paper.

Investigating vertical alignment in the LSSM

8. As a group, analyze the trajectory, considering the following questions:
   - What changes occur from grade to grade?
   - Where are concepts introduced, developed, and finalized?
   - Does an idea or skill get more complex, and if so, how?

Reflection

1. What does the classroom teacher gain from studying a vertical learning trajectory of the standards?
2. How does studying the standards in this way support students who have gaps in their learning?
3. How did the key shifts of focus, coherence, and rigor surface during this activity?

MATHEMATICS CONTENT MODULES

Module 2: Operations and Algebraic Thinking: Addition and Subtraction of Whole Numbers and Problem Types
Session 3: Deepening Mathematical Content Knowledge for Effective Instruction

Grades K–5

Exploring addition and subtraction problem types

Solve this problem using two different strategies. You can use numbers, pictures, and/or words.

Two dogs played in the park.
Three more dogs ran up to play.
How many dogs are playing now?

Image credit: malamoosh / iStock / Thinkstock

Math Content Module 2, Session 3
Grades K–5

20

Exploring addition and subtraction problem types

Citation: "Table 1. Common addition and subtraction situations," in Glossary and Tables.
Page 60 in K-12 Louisiana Student Standards for Mathematics. Available at https://www.louisianabelieves.com/docs/default-source/teacher-toolbox-resources/louisiana-student-standards-for-k-12-math.pdf
[64 pp]

Louisiana STUDENT STANDARDS MATHEMATICS

K-12 Student Content Standards for Mathematics:
Glossary and Tables

TABLE 1. Common addition and subtraction situations.[30]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5,\ 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5,\ 5 = 5 + 0$ $5 = 1 + 4,\ 5 = 4 + 1$ $5 = 2 + 3,\ 5 = 3 + 2$

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie.	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie.

21

Exploring addition and subtraction problem types

Why consider problem types?

How can experiencing the different problem types influence students' understanding and application of the relationship between addition and subtraction?

How can instruction be strengthened by *intentionally* leveraging the lessons in the curriculum that use a variety of problem types?

Math Content Module 2, Session 3
Grades K–5

22

Exploring addition and subtraction problem types

Solve this problem using two different strategies. You can use numbers, pictures, and/or words.

Sari has two pencils. Jaime has five pencils. How many more pencils does Jaime have?

Exploring addition and subtraction problem types

Solve this problem using two different strategies. You can use numbers, pictures, and/or words.

Jaime has three more apples than Sari. Jaime has five apples. How many apples does Sari have?

Image credit: photomaru / iStock / Thinkstock

Exploring addition and subtraction problem types

Solve this problem using two different strategies. You can use numbers, pictures, and/or words.

Some dogs were playing in the park. Three more dogs ran to join them. Then there were five dogs. How many dogs were playing in the park before?

Image credit: malamooshi / iStock / Thinkstock

Math Content Module 2, Session 3
Grades K–5

25

Exploring addition and subtraction problem types

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have?
	("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

Exploring addition and subtraction problem types

1. Don has 34 brownies. He bakes 22 more. How many brownies does he have now?

2. Sam has 46 red apples and some green apples. He has a total of 88 apples. How many green apples does he have?

How will being aware of the problem types and their expectations for your grade level help you make decisions when planning?

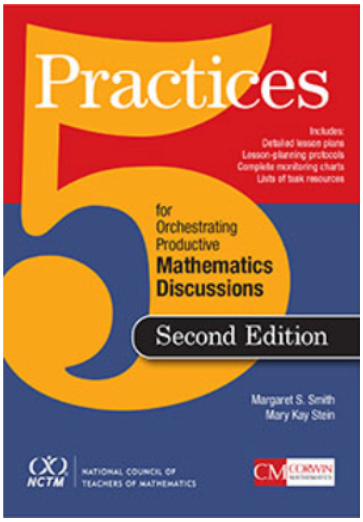
MATHEMATICS CONTENT MODULES

Module 2: Operations and Algebraic Thinking: Addition and Subtraction of Whole Numbers and Problem Types
Session 4: Instructional Strategies to Improve Curriculum Implementation

Grades K–5

The National Council of Teachers of Mathematics book:

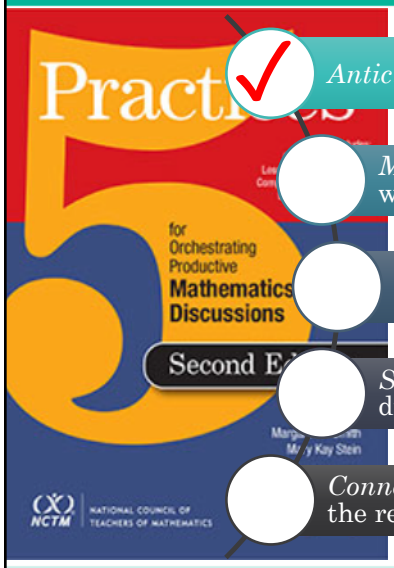
5 Practices for Orchestrating Productive Mathematics Discussions



— Smith, M. S., & Stein, M. K. (2018, second edition.). *5 practices for orchestrating productive mathematics discussions.* Reston, VA: National Council of Teachers of Mathematics. Available at https://www.nctm.org/Store/Products/5-Practices-for-Orchestrating-Productive-Mathematics-Discussion,-2nd-Edition

29

5 Practices for Orchestrating Productive Mathematics Discussions

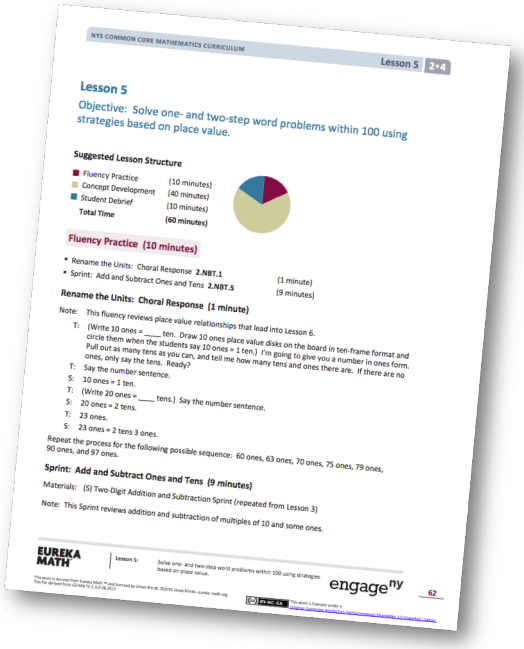


- *Anticipating* student responses prior to the lesson
- *Monitoring* students' work on—and engagement with—the tasks
- *Selecting* particular students to present their mathematical work
- *Sequencing* students' responses in a specific order for discourse
- *Connecting* different students' responses, and connecting the responses to key mathematical ideas

Math Content Module 2, Session 4
Grades K–5

30

Establishing the lesson objective



NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 5 2•4

Lesson 5

Objective: Solve one- and two-step word problems within 100 using strategies based on place value.

Suggested Lesson Structure

Fluency Practice	(10 minutes)
Concept Development	(40 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**

Fluency Practice (10 minutes)

- Rename the Units: Choral Response **2.NBT.1** (1 minute)
- Sprint: Add and Subtract Ones and Tens **2.NBT.5** (9 minutes)

Rename the Units: Choral Response (1 minute)

Note: This fluency reviews place value relationships that lead into Lesson 6.

T: (Write 10 ones = ____ ten. Draw 10 ones place value disks on the board in ten-frame format and circle them when the students say 10 ones = 1 ten.) I'm going to give you a number in ones form. Pull out as many tens as you can, and tell me how many tens and ones there are. If there are no ones, only say the tens. Ready?
T: Say the number sentence.
S: 10 ones = 1 ten.
T: (Write 20 ones = ____ tens.) Say the number sentence.
S: 20 ones = 2 tens.
T: 23 ones.
S: 23 ones = 2 tens 3 ones.

Repeat the process for the following possible sequence: 60 ones, 63 ones, 70 ones, 75 ones, 79 ones, 90 ones, and 97 ones.

Sprint: Add and Subtract Ones and Tens (9 minutes)

Materials: (S) Two-Digit Addition and Subtraction Sprint (repeated from Lesson 3)

Note: This Sprint reviews addition and subtraction of multiples of 10 and some ones.

EUREKA MATH | Lesson 5: Solve one- and two-step word problems within 100 using strategies based on place value. engage^ny 62

31

Anticipating student responses

Mathematics

Consider which strategies are likely to be most useful in addressing the content.

Consider which strategies students are likely to use.

Consider how to respond to likely student work.

Math Content Module 2, Session 4
Grades K–5

32

Anticipating student responses

Mathematics

- Consider which strategies are likely to be most useful in addressing the content.
- Consider which strategies students are likely to use.
- Consider how to respond to likely student work.

Math Content Module 2, Session 4
Grades K–5

33

Student debrief

- Is it necessary to address all misconceptions during the student debrief?
- How might the coherence of the standards help us anticipate / address misconceptions?

Student Debrief (10 minutes)

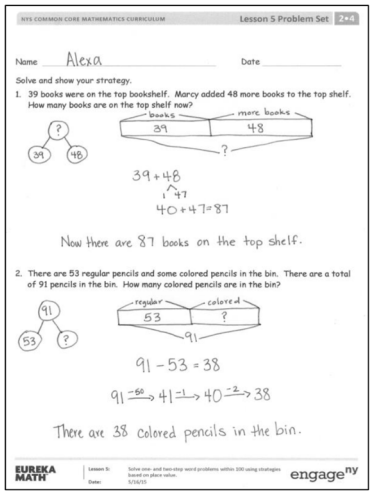
Lesson Objective: Solve one- and two-step word problems within 100 using strategies based on place value.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

- Let's chart the different problem-solving strategies we have used today (to be referenced in future lessons throughout the module). What did today's problem-solving strategies have in common?


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 5 Problem Set 2•4

Name Alexa Date

Solve and show your strategy.

1. 39 books were on the top bookshelf. Marcy added 48 more books to the top shelf. How many books are on the top shelf now?

books: 39; more books: 48; ?

39 + 48
47
40 + 47 = 87

Now there are 87 books on the top shelf.

2. There are 53 regular pencils and some colored pencils in the bin. There are a total of 91 pencils in the bin. How many colored pencils are in the bin?

regular: 53; colored: ?; 91

91 − 53 = 38

91 −50→ 41 −1→ 40 −2→ 38

There are 38 colored pencils in the bin.

EUREKA MATH | Lesson 5: Solve one- and two-step word problems within 100 using strategies based on place value. | Date: 5/16/13 | engage^ny

EUREKA MATH | Lesson 5: Solve one- and two-step word problems within 100 using strategies based on place value. | engage^ny

34

Anticipating student responses

Reflection

- How do collaborative conversations with colleagues help teachers plan for productive discourse?

MATHEMATICS CONTENT MODULES

Module 2: Operations and Algebraic Thinking: Addition and Subtraction of Whole Numbers and Problem Types
Session 5: Purposeful Planning of the EngageNY Curriculum

Grades K–5

Collaborative planning

What is collaborative planning?

- Working and learning together to plan instruction (including lessons, units, assessments, and activities) focused on building the intended learnings described by the standards.
- Discussing, interpreting, and refining curriculum resource materials together in order to use them to best meet our students' needs in their learning.

Collaborative planning

Why collaborative planning?

Research tells us that high-quality collaboration benefits teachers and students.

"High-quality collaboration… among teachers is associated with increases in their students' achievement, their performance, and their peers' students' achievement."

— Ronfeldt, M., Farmer, S., McQueen, K., & Grissom, J. (2015). Teacher collaboration in instructional teams and student achievement. *American Educational Research Journal, 52*(3), 475–514. Available at https://learningforward.org/docs/default-source/jsd-october-2015/high-quality-collaboration-benefits-teachers-and-students.pdf

Collaborative planning

What do we want to achieve in collaborative planning sessions?

- Build a shared understanding of the math content described in the standards and what that content looks like in teaching and learning.
- Consider and use instructional strategies and resources that will best build on students' current understanding and connect to the intended learning.

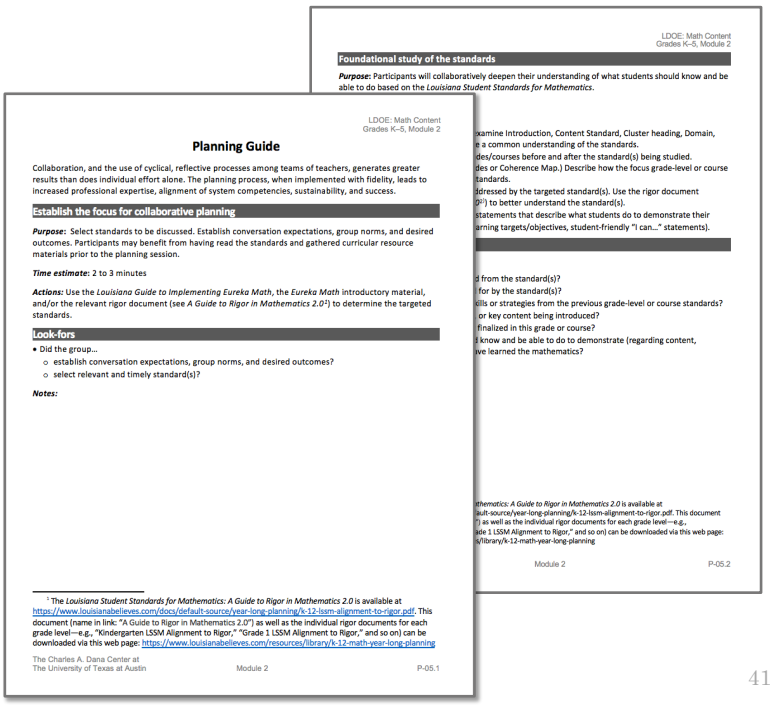
Collaborative planning

What often comes out of unstructured planning sessions?

- Quick decisions and distributed responsibilities instead of collaboration
- Varying interpretations of the content, leading to confusion
- Ruminating about previous resources and standards
- Tyranny of the urgent crowding out the important

Tool that promotes effective collaborative planning:

The Planning Guide



LDOE: Math Content
Grades K–5, Module 2

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 *Louisiana Guide to Implementing Eureka Math*, the *Eureka Math* introductory material, 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:

[1] The *Louisiana Student Standards for Mathematics: A Guide to Rigor in Mathematics 2.0* is available at https://www.louisianabelieves.com/docs/default-source/year-long-planning/k-12-lssm-alignment-to-rigor.pdf. This document (name in link: "A Guide to Rigor in Mathematics 2.0") as well as the individual rigor documents for each grade level—e.g., "Kindergarten LSSM Alignment to Rigor," "Grade 1 LSSM Alignment to Rigor," and so on) can be downloaded via this web page: https://www.louisianabelieves.com/resources/library/k-12-math-year-long-planning

The Charles A. Dana Center at
The University of Texas at Austin — Module 2 — P-05.1

LDOE: Math Content
Grades K–5, Module 2

Foundational study of the standards

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

Module 2 — P-05.2

41

Collaborative planning conversation

Image credit: mguca / iStock / Thinkstock

Observe the group using the Planning Guide to

- establish the focus for collaborative planning.
- conduct a foundational study of the standards.

What did the team accomplish in their conversation?

Math Content Module 2, Session 5
Grades K–5

42

Collaborative planning conversation

Let's try it together!

Focus Standards: Represent and Solve Problems Involving Addition and Subtraction

- Kindergarten: K.CC.C.6, K.OA.A.2, K.OA.A.3, K.OA.A.4
- Grade 1: 1.OA.A.1, 1.OA.C.6, 1.OA.D.8
- Grade 2: 2.OA.A.1, 2.OA.B.2
- Grade 3: 3.OA.D.8, 3.OA.D.9
- Grade 4: 4.OA.A.3, 4.OA.C.5
- Grade 5: 5.NBT.B.7, 5.OA.B.3

Image credit: Creatas Images / Creatas / Thinkstock

Math Content Module 2, Session 5
Grades K–5

43

Collaborative planning conversation

Foundational Study of the Standards

1. Analyze the targeted standard(s) (examine Introduction, Domain, Cluster Heading, and Content Standard) to ensure a common understanding of the content.
2. Identify related standards in the grades/courses before and after your grade, using the Remediation Tables or Coherence Map. Describe how the focus grade/course level standards differ from the standards for the grades or courses adjacent to (before or after) your grade level or course.

Math Content Module 2, Session 5
Grades K–5

44

Collaborative planning conversation

Foundational Study of the Standards

3. Describe the components of rigor addressed by the targeted standard(s). Use the Rigor Document to better understand the standard(s).
4. 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).

Collaborative planning conversation

Reflection on collaborative planning conversation

- What important ideas surfaced in your grade-level study of the standards?

Preview the last portion of the Planning Guide.

- Where is this conversation headed?
- After completing the foundational study of these standards, how well prepared do you feel to move into planning lessons aligned to the standards and achieving the components of rigor?

MATHEMATICS CONTENT MODULES

Module 2: Operations and Algebraic Thinking: Addition and Subtraction of Whole Numbers and Problem Types
Session 6: The Role of a Productive Classroom Culture in the EngageNY Curriculum

Grades K–5

A metaphor activity

Take a few moments to consider the images posted around the room.

Which one of these images best resonates with you as a metaphor for learning? Why?

- Spend 2 to 3 minutes introducing yourself to others in your group, and explain why you chose this image.
- Document reasons for selecting that image on the chart paper next to it.
- Be prepared to share with the whole group.

Reflecting on learning

What? What are one or two things that you can take away from our learning in this Module?

So What? Why do these things matter in your classroom?

Now What? How will we take our learning back to the classroom?

References

Key resources available via the **Louisiana Department of Education** web page—K-12 Math Planning Resources, https://www.louisianabelieves.com/resources/library/k-12-math-year-long-planning — include the following:

- *K–12 Louisiana Student Standards for Mathematics (LSSM)*
- *Teachers Companion Documents*
- *Implement The Eureka Curriculum: Louisiana Eureka Guides.*
- *Help Students Who Struggle: Remediation Guides*.
- *The Louisiana Student Standards for Mathematics: A Guide to Rigor in Mathematics 2.0*, at https://www.louisianabelieves.com/docs/default-source/year-long-planning/k-12-lssm-alignment-to-rigor.pdf This document (name in link: "K-12 LSSM Alignment to Rigor") as well as the individual rigor documents for each grade level—e.g., "Kindergarten LSSM Alignment to Rigor," "Grade 1 LSSM Alignment to Rigor," and so on) can be downloaded via this web page: https://www.louisianabelieves.com/resources/library/k-12-math-year-long-planning

Other resources referenced include:

EngageNY, from the New York State Department of Education
Various curriculum resources, available via https://www.engageny.org

- (2013 July 4). How to Implement A Story of Units. Available at https://www.engageny.org/sites/default/files/resource/attachments/how_to_implement_a_story_of_units.pdf
- Pre-Kindergarten-Grade 5 Mathematics: Curriculum Map and Guiding Documents. EngageNY. Available via https://www.engageny.org/resource/pre-kindergarten-grade-5-mathematics-curriculum-map-and-guiding-documents

These curriculum resources are shared under the EngageNY terms of use (https://www.engageny.org/terms-of-use) and the Creative Commons license—Attribution-NonCommercial-ShareAlike 3.0 Unported (CC BY-NC-SA 3.0)—mentioned therein: https://creativecommons.org/licenses/by-nc-sa/3.0

Ronfeldt, M., Farmer, S., McQueen, K., & Grissom, J. (2015). Teacher collaboration in instructional teams and student achievement. *American Educational Research Journal, 52* (3), 475-51.

Smith, M. S., & Stein, M. K. (2018, second edition.). *5 practices for orchestrating productive mathematics discussions.* Reston, VA: National Council of Teachers of Mathematics. Available at https://www.nctm.org/Store/Products/5-Practices-for-Orchestrating-Productive-Mathematics-Discussion,-2nd-Edition

Module evaluation

Your feedback and comments are important to us. Please complete the module evaluation found at:

http://www.utdanacenter.org/ldoe/surveys