Math 1 (CC)

Math 1 (CC) Grade 1 | Mathematics | Common Core | 2013-2014

Monday, February 3, 2014, 3:43PM

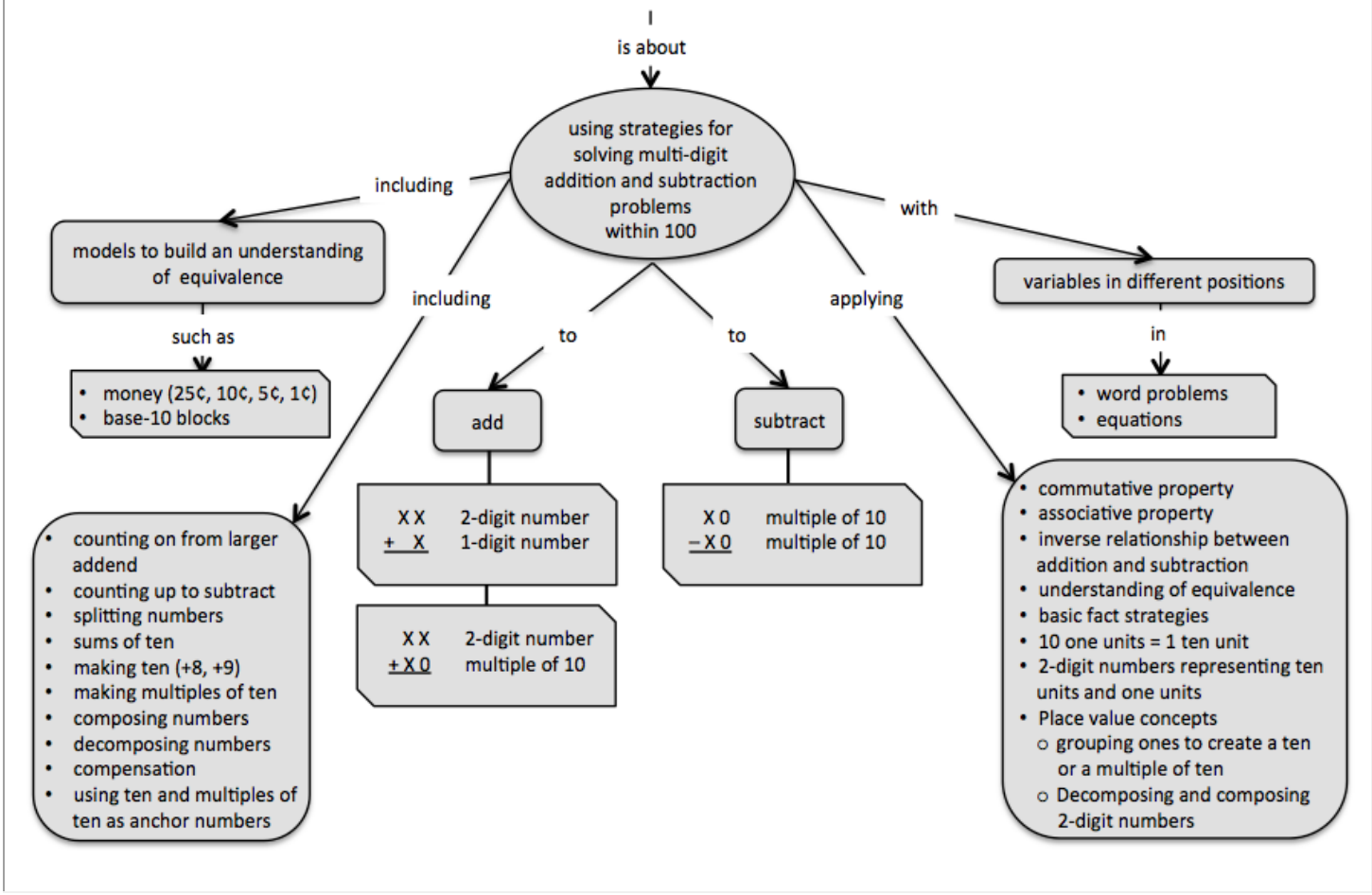
Unit: 7 - Using Equivalence and Place Value (Week 30, 7 Weeks)

Common Core Initiative

Overarching Questions and Enduring Understandings

How does understanding equivalence help us solve addition and subtraction problems?

Graphic Organizer



Unit Abstract

By the time they reach Unit 7, students have had many experiences with place value concepts and with a variety of concrete, representational and abstract models and methods of solving one-and-two digit addition and subtraction problems. And by this time there may be a range between students who still need to work with manipulatives they can group and those who are ready to work with more abstract models for thinking.

This unit focuses on students adding and subtracting two-digit numbers within 100. Students use place value models and strategies grounded in their understanding, relate concrete and pictorial models to a written method and explain the reasoning behind their solution strategies. Their written methods should be based on place value and properties of operations. As they share their thinking with others, it becomes clear that there is a variety of strategies that students are using. They benefit from and learn from each other. Students will develop deeper number sense as they recognize that numbers can be manipulated in many ways and remain equivalent. They experience this as they apply, with understanding, the composition and decomposition of numbers, the inverse relationship between addition and subtraction,

the commutative and associative properties of addition. They apply their understanding to solving both word problems and equations.

Students will continue working on strategies for basic facts and will apply these strategies to multiples of ten. For instance, if students know 4 + 5 = 9, they can solve 40 + 50 = 90. They will mentally add and subtract 10 to given two-digit numbers. When adding two-digit numbers, they will add one whose sums are greater than ten. To do that, they may split numbers to make a ten (or multiple of ten). For instance, if the problem is 26 + 9, they may split 26 into 25 + 1. They would be thinking, 26 + 9 = (25 + 1) + 9 = 25 + (1 + 9) = 25 + 10 = 35. Another strategy is to add ten, then subtract 1. For instance, 26 + 9 = 26 + 10 – 1 = 35. An open number line is a particularly effective tool for representing this thinking.

Unit Overview (Word)

Unit Overview (PDF)

Content Expectations/Standards	Unit Level Standards
Grade 1, Operations & Algebraic Thinking **1.OA.B. Understand and apply properties of operations and the relationship between addition and subtraction.** • 1.OA.B.3. Apply properties of operations as strategies to add and subtract. Students need not use formal terms for these properties. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* • 1.OA.B.4. Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. Add and subtract within 20. **1.OA.C. Add and subtract within 20.** • 1.OA.C.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). • 1.OA.C.6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). 1.OA.D. Work with addition and subtraction equations. • 1.OA.D.7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2. **Grade 1, Number & Operations in Base Ten** **1.NBT.B. Understand place value.** • 1.NBT.B.2. Understand that the two digits of a	

two-digit number represent amounts of tens and ones. Understand the following as special cases:
  - 1.NBT.B.2a. 10 can be thought of as a bundle of ten ones — called a “ten.”
  - 1.NBT.B.2b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
  - 1.NBT.B.2c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
- 1.NBT.B.3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

1.NBT.C. Use place value understanding and properties of operations to add and subtract.

- 1.NBT.C.4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
- 1.NBT.C.5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
- 1.NBT.C.6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Essential/Focus Questions	**Key Concepts**
1. In what ways can numbers be decomposed and composed? How is decomposing/composing helpful when solving problems? 2. How is knowledge of place value important to solving problems? 3. How can exploring one another’s strategies help us understand and solve problems? 4. What can you learn from solving problems in more than one way? 5. How can we use strategies (e.g., make-a-ten) to make problems easier to solve in our heads? 6. What are benchmark numbers and why are they important?	Key Concepts: unitizing equivalence place value composing decomposing compensation benchmark number (10 or a multiple of 10) ones tens strategy modeling inverse operations Commutative property Associative property
Assessment Tasks	**Intellectual Processes**
	Standards for Mathematical Practice

Assessment Overview Assessment Task 1 Assessment Task 2	***Students will have opportunities to:*** • reason abstractly when decomposing numbers and representing problems symbolically; • construct viable arguments for explaining solutions to problems and why a strategy works; • use appropriate tools strategically to investigate math problems and represent solutions; • attend to precision when solving addition and subtraction problems; and • look for and make use of structure when composing and decomposing numbers.
Lesson Sequence	**Resources**
Lesson Overview Complements of 10 - Missing Addend Empty Ten-Frames Make Ten! Strategy Make Ten_Flash Cards Say Ten Fact_Part 1 Say Ten Fact_Part 2 Sums of 10 Practice Sums of 10_10-frames Worksheet 1 Professional Learning Task - Student Work Samples	Unit Resources - 5.31.13

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Last Updated: Friday, January 31, 2014, 4:56PM
Atlas Version 8.0.2