



Investigations

in Number, Data, and Space®

Unit Guide for Grade 3, Unit 1:
Trading Stickers, Combining Coins
Addition, Subtraction, and the Number System 1



Unit Guide for Grade 3, Unit 1

Trading Stickers, Combining Coins

Addition, Subtraction, and the Number System 1

Unit Summary:

Students solve addition problems with two and small three-digit numbers, solve subtraction problems involving two-digit numbers, find combinations of numbers that add to 100, and work with coins and coin values. Their understanding of place value develops as they add and subtract 10s to and from three-digit numbers, break three-digit numbers into hundreds, tens, and ones in different ways, and solve story problems involving hundreds, tens, and ones.

Materials:

Trading Stickers, Combining Coins (1 copy per person)

Resource Master M4, 100 Chart (1 per person)

Student Activity Book pp. 15-16, How Many More Stickers to Get 100? (1 per person)

Resource Master M12, 100 Grids (1 per person)

Resource Master M13, Capture 5 (1 per pair)

Resource Masters M14-M15, Change Cards (1 deck per pair, see Materials to Prepare, p. 25)

Resource Master M16, Capture 5 Recording Sheet

Resource Master M30, *Close to 100* (1 per pair)

Student Activity Book p. 39, Close to 100 Score Sheet (1 per pair)

Digit Cards (1 deck per pair) Use manufactured decks or Resource Masters M33-M35, see Materials to Prepare, p. 97

Student Activity Book p. 49, Story Problems 4 (1 per person)

Do the following activities from *Trading Stickers, Combining Coins*:

1. Identify the mathematics in the unit

To get an overview of the mathematics students will be doing in this unit, refer to these sections in the unit front matter. As you look at these sections, begin thinking about the main mathematical ideas students work on in this unit.

- Turn to pp. 8-9, *Overview of This Unit*. Look at the title of each Investigation and read the summary for each Investigation.
- Review the *Mathematics in This Unit* essay, pp. 10-13. Look at the Mathematical Emphases and Math Focus Points. (The emphases are numbered, and can be found above bulleted lists of Math Focus Points.)

- Read the “Benchmarks in This Unit” in the table on p. 15, *Assessing the Benchmarks*.

Discuss

- What mathematical ideas and skills are students working on in this unit?
- What mathematics are students expected to know at the beginning of the unit? At the end?

2. Introducing How Many More Stickers to Get 100? (Session 1.4)
How Many More Stickers to Get 100? (Session 1.4)

(Note: In Grade 2, a context used for representing the place-value of 2- and 3-digit numbers is stickers sold at a “Sticker Station” in sheets of 100, strips of 10s and singles. This context is also used in Grade 3.)

In this session, students consider a context in which stickers are stored in books with 100 to a page. Students solve missing addend problems in which they determine how many more stickers are needed to make 100. They use 100 grids and number lines as tools for solving the problems and representing their strategies.

- Read the Activity, *Introducing How Many More Stickers to Get 100?*, pp. 53-55. Solve the problems on Student Activity Book pp. 15-16, *How Many More Stickers to Get 100?*

Discuss

- How does the context of Sticker Station help students understand the structure of our base-ten number system, particularly 100?
- What strategies do you expect to see your students using to solve these problems?

- Read the Discussion, *Representing Strategies on the Number Line*, pp. 56-59, including the Algebra Note, *The Relationship Between Addition and Subtraction*, p. 57, and the Math Note, *Representing Subtraction on the Number Line*, p. 58.

- Use an unmarked number line to represent the strategies you used to solve the first two problems on Student Activity Book p. 15.

Discuss

- Compare how people in your group used the number line to represent their solution. What was the same and different?
- How does using the unmarked number line in these problems highlight the relationship between addition and subtraction?
- How can the use of the number line as a representation support students’ understanding of subtraction as the difference between two numbers?

3. Capture 5 (Session 1.5)

Capture 5 is a game that involves students in adding and subtracting multiples of 10 and 1 to and from numbers up to 100.

- Play the game *Capture 5*, following the directions on Resource Master M13, including recording your equations on Resource Master, M16, Capture 5 Recording Sheet.

Discuss

- What strategies did you use as you played *Capture 5*?
- How can you support students in developing more efficient strategies as they play this game, for example moving from counting by 1s to making moves in larger chunks? (Refer to the *Ongoing Assessment: Observing Students at Work* and *Differentiation: Supporting the Range of Learners*, pp. 63-64.)

- Read the Discussion, *Strategies for Capture 5*, on pp. 72-74 in Session 1.7, and the Dialogue Box, *Strategies for Capture 5*, p. 171.

Discuss

- How does *Capture 5* highlight the relationship between addition and subtraction?

4. Close to 100 (Session 2.2)

Close to 100 is a game that involves using knowledge of place value and known combinations with sums of 100 ($20 + 80$, $25 + 75$, $50 + 50$, etc.) to find pairs of 2-digit numbers that add to 100 or close to 100.

- Play the game *Close to 100*, following the directions on Resource Master M30. Keep score on Student Activity Book p. 39, Close to 100 Recording Sheet.

Discuss

- What strategies did you use as you played *Close to 100*? For example, did you use familiar combinations (e.g., $50 + 50$ or $75 + 25$) to help you? If so, explain how.
- How did your understanding of place value help you choose two numbers with a sum of 100 or close to 100?

- Read the *Differentiation: Supporting the Range of Learners*, p. 108, and the Discussion, *Strategies for Close to 100*, pp. 113-115, in Session 2.3.

Discuss

- How can you support students who are making combinations randomly?
- How can you scaffold the activity for them to help them consider combinations they know that make 100 or to encourage them to consider the sum of the tens digits when picking two numbers?

5. Story Problems (Session 2.5)
Story Problem Strategies (Session 2.6)

Students revisit and extend the work they have done in this unit solving story problems. In this session, they solve problems that involve sums over 100.

- Solve Problems 1 and 3 on Student Activity Book p. 49, Story Problems 4. Read the Activity *Story Problems*, pp. 123-124.

Discuss

- What strategies did you use to solve these two problems?
- What will you look for as your students do this work?
- What tools or representations might you encourage students to use to help them make sense of these problems and/or become more efficient in solving them?

- Read the Discussion, *Story Problem Strategies*, pp. 126-130, in Session 2.6, and the Teacher Note, *Addition Strategies*, pp. 149-151.

Discuss

- As the students in this discussion share their strategies, the teacher refers to the problem context as she questions them. How does this help the students keep track of the parts of the problem that have been solved and the parts that remain to be solved?
- How does the use of cubes help the students visualize the strategy of adding by place?
- How does the unmarked number line help them visualize and compare Gil and Kim's strategies of adding one number in parts?

6. Wrap Up

- Look back at the unit overview, pp. 8-9.

Discuss

- How do the activities done during this unit study fit into the overall mathematical storyline of the unit?

Other Key Features of *Trading Stickers, Combining Coins*

- Algebra Connections in this Unit, pp. 16-17
- Classroom Routine and Ten-Minute Math in This Unit, p. 18
 - What's the Temperature?*
 - Practicing Place Value*
 - More or Less?*
- Assessment
 - Adding and Subtracting 10s (Sessions 1.6-1.7)
 - Resource Master, M3 Assessment Checklist
 - Hundreds, Tens, and Ones (Session 1.9)
 - Teacher Note, pp. 153-158
 - Addition Combinations (Session 2.5)
 - Teacher Note, pp. 161-163
 - End-of-Unit Assessment (Session 2.8)
 - Teacher Note, pp. 164-169