A Step-by-Step Approach to Computation

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Content Summary

Unit 1
Reviewing Addition and Introducing the Count-On Addition Strategy
1.1 Working with Active and Static Addition Problems
1.2 Using Concrete Materials to Model the Count-On Strategy
1.3 Using Pictorial Materials to Model the Count-On Strategy
1.4 Writing Turnaround Addition Facts
1.5 Beginning to Practice Count-On Facts

Unit 2
Reviewing Take-Away Subtraction and Relating Subtraction to Addition
2.1 Reviewing Take-Away Subtraction
2.2 Identifying the Total and the Parts in a Subtraction Situation
2.3 Writing Related Subtraction Facts: Identifying the Two Parts
2.4 Relating Subtraction to Addition
2.5 Writing Addition and Subtraction Fact Families

Unit 3
Introducing the Use-Doubles Addition Strategy
3.1 Introducing the Use-Doubles Addition Strategy
3.2 Introducing Double-Plus-1 Facts
3.3 Reinforcing Double-Plus-1 Facts
3.4 Introducing Double-Plus-2 Facts
3.5 Reinforcing Double-Plus-2 Facts

Unit 4
Developing the Language of Missing-Addend Subtraction
4.1 Writing Take-Away Subtraction Sentences
4.2 Relating Subtraction to Addition
4.3 Introducing the Missing-Addend Concept
4.4 Working with a Missing Addend
4.5 Writing Related Addition and Subtraction Facts

Unit 5
Working with Place Value and Relative Position
5.1 Writing Two-Digit Numbers
5.2 Reading and Writing Two-Digit Numbers
5.3 Reading and Writing Numbers with Zeros
5.4 Building a Number Track
5.5 Locating Numbers on a Number Track

Unit 6
Developing the Language of Difference Subtraction
6.1 Writing Related Addition and Subtraction Facts
6.2 Writing Fact Families
6.3 Using Subtraction to Compare Numbers
6.4 Comparing Data
6.5 Solving Problems Involving Addition and Subtraction

Unit 7
Exploring Equality and Inequality in Number
7.1 Exploring the Symmetry of Equations
7.2 Counting On to Balance Equations
7.3 Balancing Equations
7.4 Balancing Pairs of Numbers
7.5 Working with Inequality

Unit 8
Introducing the Bridge-to-10 Addition Strategy
8.1 Exploring Combinations of 10
8.2 Working with Three Addends
8.3 Introducing the Bridge-to-10 Strategy
8.4 Using the Bridge-to-10 Strategy
8.5 Reinforcing the Bridge-to-10 Strategy

Unit 9
Working with Two-Digit Numbers
9.1 Working with Tens and Ones
9.2 Reading and Writing Teen Numbers
9.3 Counting by Tens: On the Decade
9.4 Counting by Tens: Off the Decade
9.5 Counting Back by Tens: Off the Decade

Unit 10
Extending the Count-On Addition Strategy to Two-Digit Numbers
10.1 Counting On 1 or 2 from a Two-Digit Number
10.2 Counting On 10 or 20
10.3 Counting On 10 or 20 Cents
10.4 Counting On in the Tens or Ones Place
10.5 Counting On Tens and Ones

Unit 11
Extending the Count-Back Subtraction Strategy to Two-Digit Numbers
11.1 Counting Back 1 or 2: Beyond the Basic Number Facts
11.2 Counting Back 10 or 20
11.3 Counting Back 10 or 20 Cents
11.4 Counting Back from a Two-Digit Number
11.5 Counting Back Tens and Ones

Unit 12
Extending the Use-Doubles Addition Strategy
12.1 Doubling Multiples of Ten
12.2 Doubling Multiples of Five
12.3 Doubling Teens
12.4 Adding and Subtracting Multiples of Ten
12.5 Working with Multiples of Five
Working with Three Addends

focus
In this session, students explore methods to add more than two numbers. They are encouraged to search for efficient addition methods that informally use the commutative and associative properties.

daily number sense
Draw these pan balance pictures on the board.

Ask, What multiples of ten can we write on these shapes so the pictures make sense? How do you know? Invite individuals to suggest numbers, write the numbers on the shapes, and explain their thinking. After discussing the first example, ask the students to suggest three other pairs of numbers that could be written on the shapes on the second picture.

activity
1. Sort the connecting cubes into three piles according to color. Ask volunteers to grab one handful of cubes from each of the three piles. They should join the cubes of each color together to form a train as shown in the examples below.

Ask, How many cubes are in each train? How many cubes are there if the three trains are joined together? How do you know? Invite individuals to hold and move around the cubes to describe the different possibilities. During the discussion, ask, What equation can we write to show the three numbers? Write the equations on the board as the students suggest them.

2. On the board, write $7 + 5 + 3 = \_\_\_$. Have the students work in pairs to construct each train of cubes and then describe how they figured out the total. Encourage them to move the cubes around to add the pair of numbers that is easiest to add first.

3. Repeat Step 2 for the number sentences shown below. Ask volunteers to complete the sentences on the board.

$$4 + 7 + 4 = \_\_\_$$
$$6 + 5 + 3 = \_\_\_$$
$$7 + 8 + 2 = \_\_\_$$

4. Have the students work independently to complete page 73 of the ORIGOmath student journal.

reflection
Discuss the methods the students used to figure out the answers to page 73 of the ORIGOmath student journal. Ask questions such as, Does it make any difference which numbers you add first? Which two numbers were the easiest to add first? When did you add a 1 or a 2—first or last?
computation practice
Have the students practice count-on-1 or -2 and double-plus-2 addition facts or complete page 32 of *Figure It! (Grade 1)*. The answers to this page can be found at www.origomath.com/answers.

consolidation
Arrange the students in groups and have them take turns to roll all three cubes. They write an addition sentence for adding all three digits. Points are scored as follows: 1 if the sum is less than 10, 2 if the sum is greater, and 3 if the sum is equal to 10.

homework
Have the students complete page 74 of the *ORIGOmath* student journal.

These students are writing an equation involving three addends to match the cube trains.