Bridges in Mathematics
Grade 3 Unit 3

Multi-Digit Addition & Subtraction

In this unit your child will:

▪ Continue to practice addition and subtraction

▪ Round multi-digit numbers and estimate their sums and differences

▪ Add and subtract 2- and 3-digit numbers using algorithms and other methods

Your child will learn and practice these skills by solving problems like those shown below. Use the free Math Vocabulary Cards app for additional support: mathlearningcenter.org/apps

PROBLEM	COMMENTS

Numbers to Add	Rounded to the Nearest Ten	Estimated Sum
ex 237 + 349	240 + 350	240 + 350 590

The sum of 237 and 349 is about equal to __590__.

Rounding helps students estimate. It also encourages students to focus on the place values of the digits, which contributes to their fluency with a variety of strategies for adding and subtracting multi-digit numbers, such as the two shown below.

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97 + 78

$$97 + 78 = 97 + (3 + 75)$$
$$= (97 + 3) + 75$$
$$= 100 + 75$$
$$= 175$$

To add 97 and 78, this student used the number line. First she added 3 to 97 to get to 100, and then she added the remaining 75. Strategies like this one can be used to add numbers mentally.

Number Line Subtraction Strategies: 3–Digit Combinations

$$562 - 347 = n$$

Removal (take away)
Taking big jumps with place value

Finding the Difference
Constant Difference

$$562 - 347 = n$$
$$+ 3 \quad + 3$$
$$565 - 350 = 215$$

This example shows two ways to calculate the difference between 562 and 347 using a number line. In the first, the student removes first 300, then 40, and finally 7 from 562. In the second, the student thinks about the distance between the two numbers. Seeing that it is easier to think about this distance if the numbers are adjusted slightly, the student adds 3 to each number: you can see on the number line why adding or subtracting the same amount to the two numbers keeps the difference (distance) between them the same.

PROBLEM			COMMENTS
	Standard Algorithm	**Different Strategy**	After students use a variety of strategies for adding and subtracting multi-digit numbers, they learn and practice the standard algorithm. At times, they will still be asked to use another strategy as well.
a 265 – 178 =	265 – 178 87	267 – 180 = 87	

FREQUENTLY ASKED QUESTIONS ABOUT UNIT 3

Q: Why aren't students taught the standard algorithm for adding and subtracting larger numbers right away? Why do they use number lines and other methods instead?

A: The standard algorithms are reliable, efficient, and elegant methods for adding and subtracting multi-digit numbers. They work every time, no matter what pair of numbers you're adding or subtracting, as long as they are performed correctly. Problems arise when students attempt to use the algorithms without having mastered the basic addition and subtraction facts, when they don't understand why the algorithms work, when they forget the steps, and when they can carry out the steps yet are unable to use their estimation skills to judge whether their final answer is reasonable.

Using models and other methods helps students see why different strategies, including the algorithm, work. This understanding, along with mastery of basic facts and a good sense of place value, ensures that students carry out the algorithms accurately and with understanding. It also helps students consider whether another approach might be efficient and facilitates mental computation.

Q: Why do some problems say not to find exact sums or differences?

A: These questions are meant to help students use their estimation and mental calculation skills. It's important for students to understand when they need to go to the trouble of making exact calculations and when they can answer a question based on an estimate. These questions also promote mental computation. For example, students might round the numbers in the problem and then add them mentally.