InsightMath Texas

Discovering Place Value Strategies

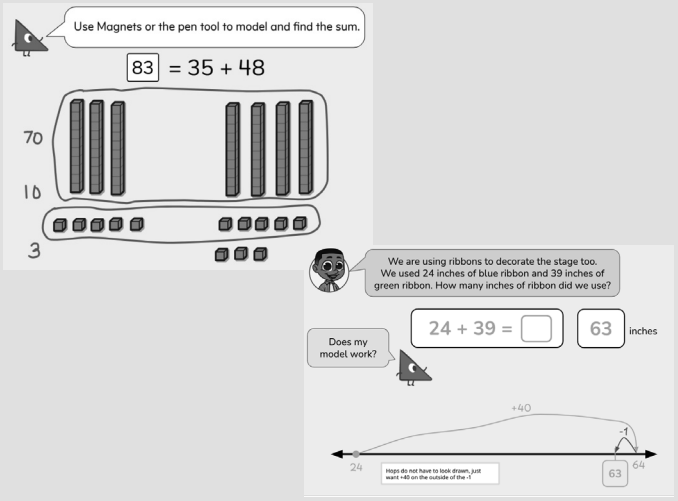
Family Guide | Grade 2 | Unit 3

Your student is exploring how applying place value understanding helps to add and subtract efficiently and use estimation to determine reasonableness.

Key Math Ideas

In this unit, they will extend their understanding of adding and subtracting two-digit numbers by exploring various strategies. They use their place value understanding to add and subtract by thinking about the number of tens and ones in each number (see examples on the right).

Students also extend their number line understanding to use numbers lines flexibly and make connections between place value models and number lines in addition and subtraction strategies.

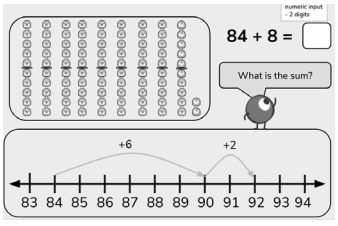


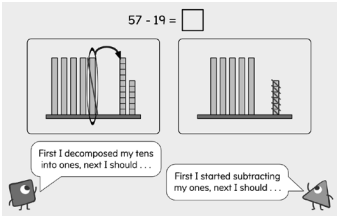
→ In the first half of the unit, your student will learn to

- add and subtract a one-digit number and multiples of 10 from a given two-digit number and describe patterns they notice in the digits in the sum, such as comparing the sums of 25 + 3 and. 25 + 30;
- identify given points and use estimation to plot points on a number line from 0–100;
- estimate sums and differences on a number line within 100;
- use number lines flexibly and efficiently to solve word problems with numbers up to 100;
- compare strategies for solving addition and subtraction problems different ways.

→ In the second half of the unit, your student will learn to

- add numbers within 100 that require composing a new ten, such as making a new ten and some more when adding 35 + 48;
- subtract numbers within 100 that require decomposing a ten, such noticing that in 57 - 19, 19 has more ones than 57, so students need to ask themselves, “What do I do?”;
- describe and use place value patterns when adding or subtracting to tell how the ones or tens places change;
- use an open number line to model addition and subtraction problems.





Helpful Hint

Throughout the unit students add or subtract two-digit numbers by

- adding the tens and ones separately, then combining;
- by adding or subtracting one of the numbers in parts, such as when subtracting 43 - 25, start with 43, subtract 10 twice, then subtract 5 more;
- adding or subtracting using nearby numbers, such as to add 19 to 32, add 20 to 32, then subtract the extra 1 that was added.

Students use these strategies to solve two-digit addition and subtraction problems mentally, using a place value model or on a number line.

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ In the first half of the unit:

- How does knowing how to count by 10s help you add/subtract numbers like this?
- Did you add the tens and ones separately? Why or why not?
- How can number lines help us compare numbers?
- How does estimation help you place numbers on a number line?

→ In the second half of the unit:

- What strategy can you use to add or subtract?
- How can counting on help you add?
- What happens when you add the ones and the total is 10 or more?
- What happens when you do not have enough ones to subtract?
- How can you show addition or subtraction on a number line?

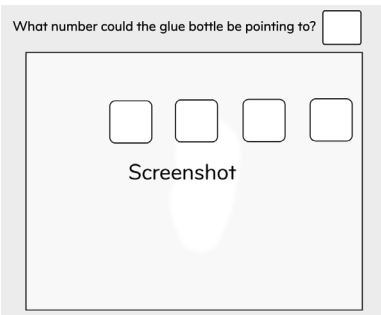
If...	Try...
Your student does not know how to solve a subtraction problem where they need to decompose the tens, like 34 - 16, where 16 has more ones than 34 . . .	asking your student, "How can you use a number line to make the problem easier to solve?" Provide your student with either an open number line or a number line labeled with tick marks from 0–34, depending on where they are in their understanding. Support students to solve while discussing their subtraction strategy.

Student Strengths Spotlight

We keep trying, even when a problem is hard.	Students persevere while adding and subtracting by composing or decomposing a ten. This new idea may be challenging, but students recognize they can learn from challenges.
We are careful about the words we use to explain thinking.	Your student will use precise language to explain strategies for adding and subtracting.

Try This Together!

- **Chalk Number Line Activities.** Help your student draw a "life size" number line in chalk outside and label it by tens. Stand in a random spot on the number line between tick marks and ask your student, "What number could I be standing at? How do you know?" Reverse the activity by asking your student to stand at a specific number and tell you how they know it is there



- **Shopping Math!** While out shopping, help your student create or solve a math problem using dollar amounts. For example, you had $35 to start with and bought an item, and now you have $15. How much was the item you bought? If your student is using mental math, pose problems where students have to add or subtract a multiple of 5 or 10, such as 35 - ? = 30 or 35 - ? = 15.
- **Would You Rather?** Pose some "Would You Rather?" questions to your student using addition and subtraction problems. For example, ask them "Would you rather 52 + 28 dollars or 23 + 42 dollars?" Have your student estimate the answer first, then find the actual actual and explain their strategy. Ask them if they needed to compose a new ten if adding, or decompose a ten if subtracting.