InsightMath

Adding and Subtracting Within 20

Family Guide | Grade 1 | Unit 5

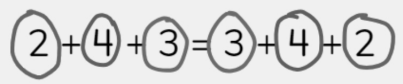
Your student is exploring how reasoning about equality helps to add and subtract efficiently.

Key Math Ideas

In previous units, students learned to add and subtract using concrete strategies such as objects, number paths, and counting on fingers. In this unit, students continue to work on solving problems with addition and subtraction but with slightly greater numbers (up to 20). Your student will first explore how there are different ways to create equal amounts, such as how 5 + 3 has the same total as 4 + 4. They then use that understanding to help them add and subtract. Students explore how to break apart numbers so they can use facts that they know to solve what that they do not know. For example, if they know 6 + 4 = 10, they can solve 6 + 7 by breaking 7 into 4 and 3, adding 6 + 4 to get 10 and then adding 3 more to get to 13.

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

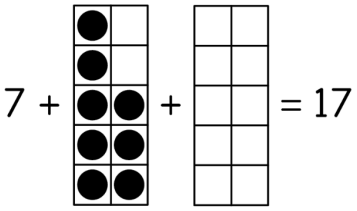
- describe that, in addition, the numbers can be added in any order and the total will stay the same;
- explain the meaning of the equal sign;
- determine whether an equation is true, without finding the total on both sides;
- arrange and rearrange objects into two groups and notice that the total stays the same.



Determining if an equation is true based on what is known about the numbers on both sides of the equal sign

→ In the middle part of the unit, your student will learn to

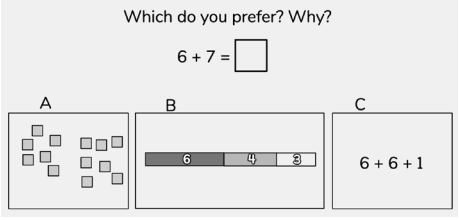
- use efficient strategies to add and subtract, such as:
  - breaking apart one number to subtract to 10. For example, solving 15 – 7 by starting with 15 – 5 to get to 10 and then subtract 2 more.
  - breaking apart one number to add to 10. For example, solving 6 + 8 by starting with 6 + 4 to get to 10 and then add 4 more.
  - using known facts, such as doubles, to help them solve. For example, knowing 5 + 5 = 10 so 5 + 6 would be one more than that.



Recognizing that 17 is 1 ten and 7 more, students add three numbers by making a ten

→ In the last part of the unit, your student will learn to

- choose and use a variety of strategies to add and subtract;
- write addition and subtraction equations to model the same situation;
- solve addition and subtraction equations with different missing numbers, such as 5 + 3 = ? or 6 + ? = 13.



Comparing strategies for adding 6 + 7

Helpful Hint

When working with your student to solve addition or subtraction problems, avoid saying, "4 + 5 *makes* 9," which reinforces the idea that the equal sign means "the answer is." We want students to understand the equal sign as a statement of equality indicating that both sides of the equal sign have the same value. Instead of "4 + 5 makes 9," say, "4 + 5 is the same as 9 " or "4 + 5 equals 9."

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ At the beginning of the unit:

- Does it matter in what order you add the numbers in the problem? Why or why not?
- How do you know if the two sides of the equation are equal?

→ In the middle of the unit:

- How can you make a ten or use doubles to solve this problem?

→ At the end of the unit:

- What addition and subtraction equation can you write to model this situation?
- What strategy will you use to solve this problem? Why?

If...	Try...
your student switches the order of numbers when subtracting, such as solving 14 – 6 by subtracting 6 – 4 or 4 – 6 . . .	asking them to look back at the original problem to see which number is the starting amount and which number is being subtracted. Suggest that they count back or model the problem with objects and compare the results.

Student Strengths Spotlight

We take time to think.	Students take their time as they develop addition and subtraction strategies to determine the most efficient strategy to solve a problem.
We talk about our ideas.	Students communicate their ideas and reasoning for how and why they chose specific strategies to solve problems.

Try This Together!

- **Addition and Subtraction All Around Us!** Use addition or subtraction in daily life. For example, while playing at the park, ask your student, "How many friends were already here and how many joined?" While taking a walk around the neighborhood, count houses on both sides of the road to see if they are equal. If not, ask, "How could you make them equal?"
- **Object Equations.** Ask your student to separate a handful of objects, such as marbles or blocks, into two piles. Ask them how they could create an addition equation and a subtraction equation from the number of objects.
- **Play a Game!** Use a deck of cards with the jokers and all face cards except for aces removed. Aces will represent the number 1. Deal six cards to each player. Each player tries to make two equal addition problems using four of their cards and to prove the equality to the other players. For example, if a player has the cards ace (1), 3, 2, 5, 2, and 6, they can say, "1 added to 3 is equal to 4, and 2 added to 2 is also equal to 4." A player who can make two equal equations gets 1 point for that round. New cards are dealt every round. The player with the most points after five rounds wins the game. You can add the challenge of justifying that the equations are equal without referencing the total. For the previous example, the player could say, "If you moved 1 from 3 and added it to the 1, you would have 2 and 2, which is what the other equation shows."