InsightMath Texas

Extending Approaches to Problem Solving

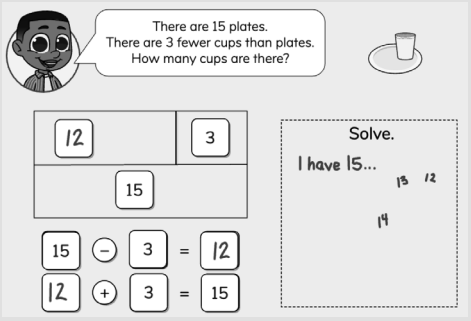
Family Guide | Grade 1 | Unit 7

Your student is exploring how addition and subtraction can help to describe and solve word problems.

Key Math Ideas

In this unit, students represent and solve addition and subtraction word problems with numbers up to 20. Students used number bond to show the relationship between numbers in a problem in previous units. In this unit students students use strip diagrams to understand and show the relationship between numbers in a problem. Building on student understanding that addition and subtraction situations can be thought of as part-part-total situations, the equal lengths of the top and bottom bars in a strip diagram helps show this clearly.

Strip diagrams are a flexible tool that students will use to make sense of and represent number relationships in word problems across the grades. However representing with a strip diagram does not solve the problem, it only helps us figure out what the words mean and whether we should add or subtract. Students still need to choose and use addition and subtraction strategies to solve the problem.



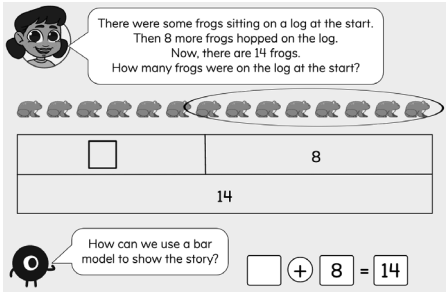
Word problem represented by a strip diagram and an equation and then solved by counting on.

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

- use strip diagrams and addition and subtraction equations to represent word problems comparing quantities;
- describe and compare the efficiency of strategies for solving word problems, including
  - counting on or counting back;
  - breaking apart one number to subtract to 10, such as solving 15 – 7 by starting with 15 – 5 to get to 10 and then subtracting 2 more;
  - breaking apart one number to add to 10, such as solving 6 + 8 by starting with 6 + 4 to get to 10 and then adding 4 more;
  - using known facts, such as doubles, to help solve, such as knowing 5 + 5 = 10 so 5 + 6 would be 1 more than that (11);
  - using addition to solve subtraction problems.

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

- use visual models to represent and solve a variety of addition and subtraction word problems, now including two-step problems;
- explain why they chose certain addition or subtraction strategies based on what was most efficient.



Helpful Hint

After making sense of a problem with a strip diagram, students need to rely on addition and subtraction strategies to solve. If your student is struggling to choose a strategy for solving addition and subtraction problems, refer to previous Family Guides to remind them about strategies they have learned such as those listed above.

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ Throughout the unit:

- What do you already know?
- What are you trying to find out?
- How can you make a strip diagram to help you understand the problem?
- What equation can you write to represent the problem?
- Will you add or subtract to solve the problem? Why?
- What strategy will you or did you use to add or subtract? Why did you choose that strategy?

If...	Try...
your student gets the problem wrong because they did not understand the relationship between the numbers in the problem . . .	asking them to act out the problem or draw a picture to help them make sense of the situation. Then, you can model their thinking by creating a strip diagram and/or equation with them.
For example, in the following problem, many students mistakenly add because they see the word "more," but the problem is actually about comparing the numbers and finding the difference: I saw 15 shooting stars. Finnie saw 7 shooting stars. How many more shooting stars did I see than Finnie?	

Student Strengths Spotlight

We take time to think.
Students take their time to understand the problem by representing it with a strip diagram. Using the strip diagram, they take their time to understand the relationship between the numbers in the problem and determine how to solve with addition or subtraction.

We make a plan.
Students choose and justify strategies for solving problems based on what they know and what they need to find in the problem.

Try This Together!

- **Daily Addition and Subtraction.** While you are making dinner or doing chores, you can pose problem situations to your student. Ask them to draw a model, write an equation, and solve the problem. You can then check their thinking. For example, you can say, "I have 15 dishes to dry, and I have already dried 9 dishes. How many more dishes do I need to dry?" You could also ask a question such as "I had some blocks out, and then I took out 5 more blocks. I now have 8 blocks out in total. How many blocks did I have out to start with?"
- **Comparing at the Park!** While at the park, make observations about objects around you and ask each other questions comparing how many more or fewer. For example, you and your student individually count how many butterflies you see. Then share with each other how many you each counted. Ask your student how many more or how many fewer butterflies they saw than you.