Solve Multi-Step Word Problems Involving Addition

Objective Model and solve word problems involving multiple addition steps.	**Materials** base-ten blocks

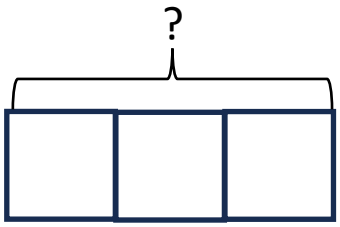
This activity extends students' prior work identifying operations for addition and subtraction word problems and writing equations for single-step problems. Now, students will apply those skills to solving multi-step addition word problems. It is important to guide students in setting up word problems and reviewing addition. It can also be helpful to use different models when solving word problems involving multiple steps. As students build fluency with solving multi-step addition word problems, they will be better prepared to set up and solve more complex problems involving all four operations and multiple steps.

Step by Step

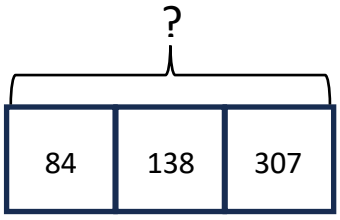
10–15 minutes

1 Model the problem.

- Display the following problem: *Ben saves 84 pennies. Hank saves 138 pennies. Tia saves 307 pennies. How many pennies do they save in all?*
- Explain that using a model can help make a plan for solving the problem.
- Display the tape diagram and guide the student in drawing a copy of it. Ask: *Why are there three boxes?* (Three different people saved pennies. There are three parts in the problem.) Ask: *Suppose only two people saved pennies. How would this change the tape diagram?* (There would only be two boxes.)



- Explain that the number or symbol at the top represents the whole. Ask: *What does the question mark mean above the boxes?* (The total number of pennies saved.) *So, keep this as a question mark.* Remind the student that the boxes at the bottom represent the parts. Ask: *What are the parts?* (84, 138, and 307). Guide the student to fill in the tape diagram.
- Discuss how to solve the problem. Remind the student that they should use addition when needing to find the whole amount. Ask: *How do you solve the problem?* (Add the number of pennies.) Ask: *What words can help you figure out what operation you can use to solve the problem?* (save in all, in all)



2 Add the parts.

- Remind the student that there are three parts, so three numbers need to be added. Start by adding two numbers. Write 84 + 138 = ? and have the student write the equation on their paper. This is the first step of the problem.
- The student may add the numbers using any strategy. One way is to add ones, add tens, add hundreds, and then find the total.
- Help the student with the addition if needed. Ask: *What is 8 ones plus 4 ones?* (12 ones or 12) *What is 3 tens plus 8 tens?* (11 tens or 110) *What comes next?* (1 hundred + 0 hundreds = 1 hundred or 100) *What is the sum?* (12 + 110 + 100 = 222)
- Ask: *Is 222 the final answer to the problem? Explain.* (No; It is the number of pennies Ben and Hank saved in all. I still need to add the pennies that Tia saved.) *What is the next step?* (Add 222 and 307.) Refer back to the model, showing that the total for three numbers is needed. Have the student write the equation 222 + 307 = ?.
- Have the student find the sum. Ask: *How many ones, tens, and hundreds are in the sum?* (9 ones, 2 tens, 5 hundreds) *What is the sum?* (529) *What does 529 mean in the situation?* (The number of pennies Hank, Ben, and Tia save in all.)

3 Use estimation to check the answer.

- Encourage the student to check the answer for reasonableness. They could use rounding to add the three numbers of pennies.
- Ask: *What is 138 rounded to the nearest hundred?* (100) *What is 84 rounded to the nearest hundred?* (100) *What is 307 rounded to the nearest hundred?* (300) *What is the sum?* (500)
- Discuss whether the estimate is reasonable by comparing the estimate to the sum. Ask: *How does the estimate compare to the sum?* (The estimate, 500, is close to the sum 529.)

4 Repeat with another problem.

- Pose another problem for the student: Mrs. Green has 67 sheets of red paper and 244 sheets of yellow paper. She buys 500 sheets of blue paper. How much paper does she have in all? (811 sheets of paper)

Check for Understanding

Have the student solve the following problem: A store sells 145 plain bagels, 188 berry bagels, and 64 onion bagels. How many bagels does the store sell in all? (397 bagels)

For the student who struggles, use the chart below to help pinpoint where extra help may be needed.

If you observe…	the student may…	Then try…
the student answers 269,	have found 145 + 188 – 64 instead of 145 + 188 + 64.	having the student restate the problem in their own words and draw a picture.
the student adds the three numbers but makes an addition error,	struggle with multi-digit addition.	having the student write the numbers in a place value chart before adding them. Encourage the use of base-ten blocks.