Adding with Models: Solving Word Problems

Teacher Guide

Duration: 20 minutes

Standards for Mathematics

TEKS.1.5.D.i

Represent word problems involving addition of whole numbers up to 20 using concrete models.

Focus Strategies

Think Aloud: The teacher models a process of thinking by speaking aloud what is thought. As an example, 'I think I need more color here in my drawing.' This strategy models for students the type of thinking they can use in an upcoming activity.

Think-Pair-Share: Students are prompted to think about an idea on their own. Students then share their idea with a partner and have a quick discussion. Selected students are asked to share their ideas with the whole group.

Materials

counters or blocks, whiteboard, markers, problem string cards (with word problems)

Key Vocabulary

addition, whole numbers, model, problem, plan

Warm-Up

Begin by focusing on understanding addition words. Explain to students that certain words indicate addition, such as "add," "more," "total," "plus," and "sum." Provide examples to illustrate this: 'Roger has 5 apples, and Sammy has 2 more apples than Roger does.' This means we add 2 to 5.

Introduction

Explain to students that today they will be solving word problems using addition and concrete models. Introduce the concept of a problem string and how it helps us see patterns in addition.

Exploration & Whole Class Discussion

Present the first word problem (e.g., "There are 6 toy cars in the box, plus 4 more toy cars. How many toy cars are there now?"). Have students solve it using counters. After they solve it, ask a few students to share their strategies. Then, present the next problem (e.g., "If I have 7 marbles, plus 3 more marbles, how many do I have now?"). Repeat the process, encouraging students to use the strategies discussed.

Application & Reflection

For the final problem (e.g., 'I see 6 birds in a tree and 4 more come to join them. How many birds are there in total?'), have students solve it independently using their models. After solving, they will share their plans for solving the problem with a partner. Then, select a few students to share their plans with the whole class.

Assessment

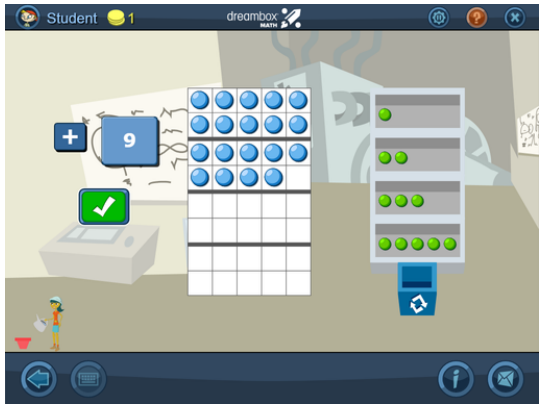
Students will write a short reflection on what strategy they found most helpful and why. They will share their reflections with a partner, and then selected students will share with the class. The teacher will assess understanding based on participation in discussions and the reflections shared.

Strategies to Support Emergent Bilingual Students

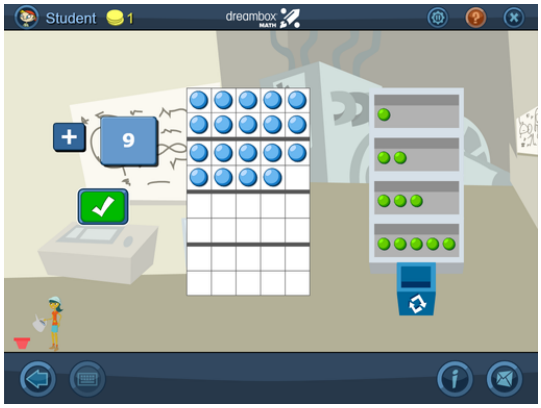
To support emergent bilingual students, we recommend the following:
1. Provide independent think time after asking questions or posing prompts.
2. Have students pair up with a partner to generate responses together.
3. Have students restate each other's reasoning in classroom discussions.
4. Create a public record of classroom discussions.
5. Use color and annotation to help learners make connections for concepts.
6. Introduce academic vocabulary as needed.
7. Use iconic and semantic gestures to help students understand.

Additional Support Resources

If your students need additional support, you can click on one of the lessons below and present it to your whole class. You can use the interactive manipulatives and built in feedback to support students in a whole class discussion. Good questons to ask are 'What do you see?', 'What do you think?' 'What do you wonder?'



Solving Addition Word Problems with Results Unknown Using a Math Rack



Solving Addition and Subtraction Word Problems with Results Unknown Using a Math Rack

Sample Lesson Flow

TEACHER SAY	*Today, we are going to focus on addition and how to solve word problems using addition. First, let's talk about some words that indicate addition. Can anyone tell me some words that mean we should add?*
STUDENTS DO	Raise hands to share words like 'add,' 'more,' 'total,' 'plus,' and 'sum.'
TEACHER SAY	*Great! These words help us understand when we need to add. For example, if I say, 'Roger has 5 apples, and Sammy has 2 more apples than Roger does,' what do we do with those numbers?*
STUDENTS DO	Discuss with a partner and respond.
TEACHER DO	Write the problem on the board: 5 + 2 = ?
TEACHER SAY	*Now, let's solve this problem using counters. Everyone take 5 counters for Roger's apples and 2 more for Sammy's apples.*
STUDENTS DO	Take out counters and model the problem.
TEACHER SAY	*How many apples do we have in total?*
STUDENTS DO	Count and share their answers.
TEACHER SAY	*Excellent! Now let's try another problem. I will present it: 'There are 6 toy cars in the box, plus 4 more toy cars. How many toy cars are there now?'*
STUDENTS DO	Solve the problem using counters.
TEACHER DO	After a few minutes, ask students to share their strategies.
TEACHER SAY	*Let's move to the next problem: 'If I have 7 marbles, plus 3 more marbles, how many do I have now?'*
STUDENTS DO	Solve the problem using their models.
TEACHER DO	Encourage students to share their strategies again.
TEACHER SAY	*Now, for the final problem: 'I see 6 birds in a tree and 4 more come to join them. How many birds are there in total?'*
STUDENTS DO	Solve the problem independently using their models.
TEACHER SAY	*Once you have your answer, turn to your partner and share your plan for solving the problem.*
STUDENTS DO	Discuss their plans with their partners.
TEACHER DO	Select a few students to share their plans with the whole class.
TEACHER SAY	*Great job! Now, I want you to write a short reflection on what strategy you found most helpful and why.*
STUDENTS DO	Write their reflections.
TEACHER DO	After writing, share your reflections with a partner.
STUDENTS DO	Share reflections with their partners.

TEACHER DO Select a few students to share their reflections with the class.

TEACHER SAY *I will assess your understanding based on your participation in discussions and the reflections you shared.*