Comparing Sets with Pictorial Models

Teacher Guide

Duration: 20 minutes

Standards for Mathematics

TEKS.1.3.B.vi

Use pictorial models to solve word problems involving comparing sets within 20 and unknowns as any one of the terms in the problem.

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

whiteboard, markers, crayons a set of word problems printed on cards

Key Vocabulary

compare, sets, unknown, pictorial model, solve, problem

Warm-Up

Begin with a quick review of addition and subtraction within 20. Ask students to share how they might represent the numbers 5 and 3 using pictures. For example, they could draw 5 apples and 3 oranges.

Introduction

Explain to students that today they will be solving problems that involve comparing different sets of objects. They will use pictures to help them understand the problems better. Introduce the concept of unknowns in a problem, explaining that sometimes we don’t know one of the numbers.

Exploration & Whole Class Discussion

Present the first problem: 'There are 7 dogs in the park, and 3 more dogs come to join them. How many dogs are in the park now?' Have students solve this problem individually using pictorial models. After a few minutes, ask volunteers to share their strategies and drawings. Discuss how they showed the problem and what the unknown number was.

Application & Reflection

Present a second problem: 'There are 10 apples in a basket. Some apples are taken away, and now there are 6 apples left. How many apples were taken away?' Students will solve this problem independently, then pair up to discuss their strategies. Select a few students to share their solutions with the class. Finally, present a final problem for independent work: 'There are 8 dogs in a park. 2 more dogs join them. How many dogs are there now?'

Assessment

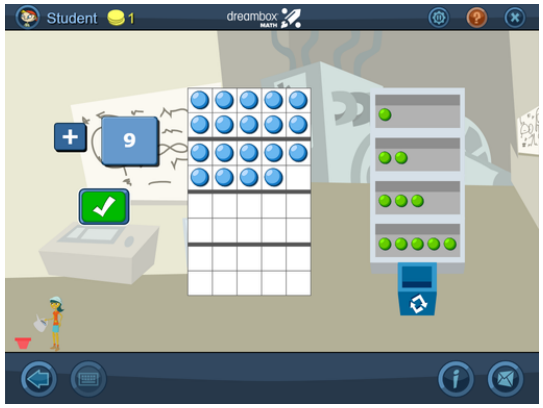
As a formative assessment, observe students during the problem-solving discussions and their ability to articulate their strategies. Collect their pictorial models and reflections on what they learned about comparing sets and identifying unknowns. Ask them to write a sentence about how they used pictures to help solve the problems.

Strategies to Support Emergent Bilingual Students

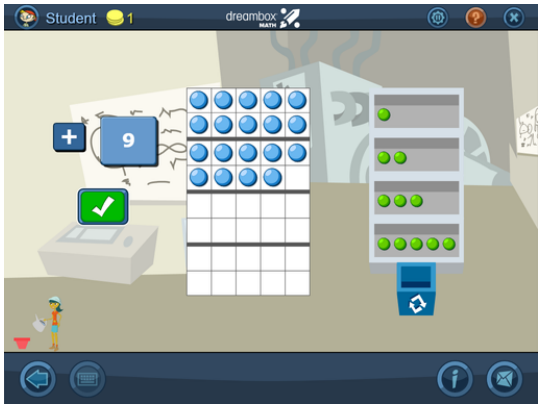
To support emergent bilingual students, we recommend the following:
1. Provide independent think time after asking questions or posing prompts.
2. Have students pair up with a partner to generate responses together.
3. Have students restate each other's reasoning in classroom discussions.
4. Create a 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?'



Solve Comparison Word Problems with Difference Unknown using a Number Line



Solve Comparison Word Problems with Difference Unknown using a Number Line

Sample Lesson Flow

TEACHER SAY	*Welcome, everyone! Today we are going to dive into some fun word problems that involve comparing sets of objects. Can anyone remind me what it means to compare sets?*
STUDENTS DO	Raise hands to share their thoughts on comparing sets.
TEACHER SAY	*Great ideas! Comparing sets means looking at two or more groups and figuring out how they relate to each other. Sometimes, we might not know one of the numbers in the problem, and that's what we call an unknown. Let's get started!*
TEACHER DO	Write the first problem on the board: 'There are 7 dogs in the park, and 3 more dogs come to join them. How many dogs are in the park now?'
TEACHER SAY	*Take a moment to think about this problem. I want you to draw a pictorial model to help you solve it. Remember, you can draw the birds to represent the numbers.*
STUDENTS DO	Work independently to draw their pictorial models for the problem.
TEACHER DO	After a few minutes, call on volunteers to share their plans for solving the problem and their drawings.
TEACHER SAY	*Who would like to share how they showed the problem? What did you draw?*
STUDENTS DO	Selected students share their drawings and explain their thought process.
TEACHER SAY	*Excellent work! Now, let's discuss what the unknown was in this problem. Can anyone tell me what we were trying to find?*
STUDENTS DO	Raise hands to answer about the unknown in the problem.
TEACHER SAY	*Fantastic! Now, let's move on to our next problem. I will write it on the board: 'There are 10 apples in a basket. Some apples are taken away, and now there are 6 apples left. How many apples were taken away?'*
TEACHER SAY	*Again, I want you to solve this problem using a pictorial model. Take your time and think about how you can represent the apples.*
STUDENTS DO	Work independently to draw their pictorial models for the second problem.
TEACHER DO	After a few minutes, ask students to pair up and discuss their strategies.
TEACHER SAY	*Now that you've discussed with your partner, let's hear from a few of you. Who would like to share their solution and how they figured it out?*
STUDENTS DO	Selected students share their solutions with the class.
TEACHER SAY	*Great job! Now, let's try one more problem for independent work. I will write it on the board: 'There are 8 dogs in a park. 2 more dogs join them. How many dogs are there now?'*
TEACHER SAY	*Solve this problem using a pictorial model just like we did before. Remember to think about what the unknown is.*
STUDENTS DO	Work independently to draw their pictorial models for the final problem.

TEACHER DO	As students finish, walk around to observe their work and provide support where needed.
TEACHER SAY	*Time's up! I want you to take a moment to reflect on what you learned today. How did using pictures help you solve the problems? Write a sentence about it in your math booklet.*
STUDENTS DO	Write a reflection in their math booklet about how they used pictures to help solve the problems.