

## Story Problems in Kindergarten

### Presenting Story Problems

In order to solve story problems, young students first need to be able to think about the sequence of actions in the story. This is why much of the work with story problems in Kindergarten involves children picturing the story in their minds, retelling the story in their own words, and actually acting out the action of the story. Some teachers encourage students to close their eyes to help them concentrate, and others draw quick sketches of important words on the board to help students understand and imagine the story.

The goal of this work is to help students think about the actions in the stories and choose strategies that reflect those actions, rather than choose strategies because they have been told that the problem is of a certain type. By *not* telling students whether a story is about joining or taking away and not presenting it in a predictable sequence (i.e., always combining followed by separating), students must concentrate on the actions in the story to figure out how to solve it.

We suggest that teachers use words such as *combining* and *separating* in addition to words like *adding* and *subtracting*, because they emphasize the actions involved in the stories. These terms also take into account that students may solve problems in a variety of ways. For example, they may solve *separating* problems using strategies based on either subtraction (or counting back) or addition (or counting on).

We caution against overuse of the expression “take away” for subtraction. Although “take away” is one way to conceptualize a subtraction problem (and the only way it is presented in Kindergarten), students will encounter others types of situations in Grades 1 and 2 that are also modeled by subtraction equations. For example, the following are all possible story problems for  $7 - 2 = 5$ :

- I had 7, and Karen took away 2. Now how many do I have?
- I have 7 and Karen has 2. How many more do I have? (Or, how many fewer does Karen have?)

- I have 2 (or 5). How many more do I need to get to 7?
- How far is it from 2 to 7? (Or, what is the distance between 2 and 7?)
- I had 7. I lost some. Now I have 5. How many did I lose?

### Sharing Strategies

There are always some students who are eager just to give an answer; teachers are encouraged to keep the emphasis on the solution strategies children use. In Kindergarten, you are likely to see a wide range:

For addition stories, some students will suggest counting out each group of people or objects in a story, and then counting them all, from one. Others will do the same thing, but use their fingers. Some will be ready to think about counting on, with objects, on their fingers, or in their heads. (“If there were 4, and then 3 more came, that’s 5, 6, 7.”) Some children might “just know” that 3 and 4 is 7, and a few will use combinations that they “just know” to solve other related problems; for example, “I know that 3 and 3 is 6, and 1 more makes 7.”

Strategies you are likely to see for subtraction story problems include counting out the total number, removing some, and counting the number of objects remaining, or a similar but less typical strategy of counting back. Although some Kindergarten students may “just know” some addition combinations, they are less likely to be familiar with subtraction facts. However, they may use their knowledge of addition combinations to solve such a problem: “I know 2 and 5 make 7. You had 7 and dropped 2, so there has to be 5 left.”

### Discussions About the Operation

Another part of the story problem routine involves questions about the operations. Thinking about how stories are the same or different help students focus on what is special about the operations of addition and subtraction. Some students

focus on how the quantities change: when you add you end up with more; subtraction situations leave you with less than the original number. In the words of a five- or six-year-old “[For combining stories] you get a bigger number than you started with.” If you have [6] and you take some away, you will have less than [6]. Other students talk more about the actions in the stories. In one kind of story, 2 (or more) groups are put together, joined, or combined; the other type of story involves part of a group being taken away, separated, or lost.

Understand that it may be challenging for some kindergarteners to reason in this way. Over the next couple of years, as they solve a wide variety of story problems, they will gain an understanding of what kinds of actions suggest combining and what kinds suggest separating. They will also learn to consider relationships among the quantities in a story. This kind of thinking will enable them to tackle problems that involve larger numbers and more complex structures—problems that they may not be able to act out easily.