# How to Deliver a Problem Solving Ladder

I. **Read the story statement(s) as a class with the fill-in-the-blank questions unexposed.** Problem Solving Ladders always begin with one or more story statements but no question. This is very intentional. Advanced students often resist drawing diagrams to support their work and it's hard to convince them to draw diagrams when they're able to solve without doing so. Still, diagramming is a very important skill for all students to learn and hone. By offering statements without questions, students have no option but to diagram their work for several minutes. Sometimes, I distribute a copy of Problem Solving Ladders to each student and have them fold over their paper so that only the story statement(s) and a space to draw a diagram is exposed. Other times, I project the story statement(s) onto a classroom board and have the students diagram the story statement(s) in their notebooks.

II. **Students spend several minutes diagramming the story statement(s) that they read**. During this time, I probe the room, prompting struggling students, and looking for different ways that other students correctly diagrammed the problems. When students finish early, I often have them share their diagrams with others who have finished, but recorded the information differently. This often stimulates rich math discussions. I also direct early finishers to write down questions that could be answered using their diagrams. This exercise stimulates children to see bar diagrams more elastically, i.e. their models can be used to solve more than one question.

III. **The class rereads the story statement(s) and the teacher demonstrates the process of diagramming the problem.** It's important for all students to see teachers diagram word problems so that they learn different, and in many cases simpler, methods for representing mathematical information. Sometimes, I have students, who have drawn unique, effective diagrams, share their work with the class.

IV. **Reveal fill-in the blank questions and have students work for several minutes.** In every Problem Solving Ladder that I wrote, I attempted to make letter *a* so easy that my weakest student could answer it correctly. Confidence is essential to exceling in elementary mathematics and too often I found that weaker students viewed word problems as something they couldn't do. By making the first problem below grade level, I was attempting to reverse this mentality. Just as

the weaker students need to feel successful to gain confidence, the stronger students need to feel challenged to maintain interest in the subject. When strong math students feel under-challenged, they often become bored and their morale suffers. The last problem in each Problem Solving Ladder is above grade level and in many cases will require most or all students to draw a new diagram to solve. The problems between the first and last on the page scaffold or *ladder* in difficulty.

V. **Review answers.** Problem Solving Ladders are not meant to be completed in their entirety by all students. Instead, they are designed to give all students the opportunity to reach their personal best during an allotted time (9-12 minutes). Regularly achieving one's personal best leads to realized potential, which should be the goal of teaching and learning.