

CRISS IMPROVES MATH COMPREHENSION

Writing Aids Problem Solving

Staci Auck, a Kalispell, Montana, seventh grade math teacher, asks students to write frequently in her classroom. She believes that writing helps students think through difficult steps in problem solving. Although she wants her students to primarily write for themselves, she also finds that their writing provides her with valuable insights about the students' thinking. Writing also encourages students to come up with a variety of creative ways to solve the same problem. Having students share their writing and thinking with each other assists them in discovering several options for solving a particular problem. In one lesson, she presented students with the following problem:

Last summer we went camping in Yosemite, and the first night we did a dumb thing: we left our food on the ground. A bear came along and ripped up one third of our total number of dried meals. The next day we ate four of the meals and tied the rest of the food up in a tree. It didn't seem to help, because one third of the meals we had left was ripped open by another bear. During our third day, we ate four more meals and that night, despite everything we did, one half of the remaining dried meals was ripped apart. We gave up, ate the four remaining dried meals, and headed home.

Can you tell how many dried meals we started with?

Brad reads through the problem several times. Then, he begins to write. As he writes, he begins solving the problem numerically. He goes back and forth from writing down numbers to writing down words.

$$4 \times 2 = 8$$

$$\begin{array}{r} 8 \\ + 4 \\ \hline 12 \end{array}$$

$$1/3 = ?$$

$$2/3 = 12$$

$$12 \div 2 = 6$$

$$\begin{array}{r} 6 \\ + 12 \\ \hline 18 \end{array}$$

$$18 \div 3 = 6$$

$$\begin{array}{r} 18 \\ - 6 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 18 \\ + 4 \\ \hline 22 \end{array}$$

$$1/3 = ?$$

$$2/3 = 22$$

$$22 \div 2 = 11$$

$$\begin{array}{r} 22 \\ + 11 \\ \hline 33 \end{array}$$

To get your answer, you have to start at the bottom. It says that half of the remaining meals was eaten to give the 4. So you have to multiply by 2 because a half is equal to 2. This gives you 8. Plus the 4 more meals they ate gives you 12. Now if 1/3 of the number before this was ripped apart, that means that they have 2/3 of that number left. So, 6 is half of the 2/3 left which is 12. So you have to add 6 to 12 to get 18. Let's double check. If you minus 1/3 from 18, it gives you 12. So, that's right. Then they ate 4 more meals to give them 22 meals. The next step you do is the same as the last. 1/3 was ripped up of the number before this. You have to find out what half of 22 is, because 22 is equal to 2/3. And that's how much is left. The number is 11. So add 11 to 22 and it gives you 33. That's your answer.

NOTE: This article first appeared in the Spring 1994 *Comments from CRISS*® newsletter. All material is copyrighted. Permission is granted to photocopy or print this article in its entirety, as long as all credits remain intact with the article and the Project CRISS copyright appears on the materials. This article may not be used in any other publication in any medium, without the express, written permission of Project CRISS.