

STUDENT PROBLEM CORNER

Students are encouraged to examine the problem presented below. Why does it work? Send your explanation to:

The Editors
Delta-K
c/o 2510 - 22 Avenue S
Lethbridge, Alberta
T1K 1J5

The names of students who successfully explain the trick will be published.

Lightning Addition

Ian D. Beattie
University of British Columbia

For many years, magicians have used mathematics to entertain and puzzle their audiences with amazing feats of mind reading, prediction, and rapid calculation. Most of these feats can be explained simply and learned quickly. Those who know the "trick" can derive great satisfaction from mystifying their friends, or, for teachers, their pupils!

The Trick

1. Ask a friend to write down any two one- or two-digit numbers, one below the other.
2. Tell him to add these two numbers and write the result below the other two.
3. Now, ask him to add this new number to the one above it to get a fourth number.
4. Ask him to keep doing this until he has 10 numbers written in a column.
5. Make sure that, while he is doing this, you cannot see the numbers. When he has obtained the 10 numbers, ask to see them.
6. You then quickly write in the total of the 10 numbers.
7. How? The total of the numbers is found by multiplying the fourth last number by 11.

This works no matter what numbers your friend chooses. The request that he use one- or two-digit numbers is just to keep his addition simple. It is helpful to do this on a blackboard so that classmates can check your friend's addition as he goes along.

An Example

Let's say the numbers 21 and 32 are chosen. Then the 10 numbers are: 21, 32, 53, 85, 138, 223, 361, 584, 945, 1,529. Their sum is 3,971. The fourth last number is 361. Eleven times 361 is 3971.

Dr. Beattie is Associate Professor, Department of Science and Mathematics Education, the University of British Columbia.