

## READING YOUR MIND!

**Math skills:** Addition  
**You will need:** Four strips of cardboard  
**Difficulty level:** 1

**Introduction:** Tell your students that you can guess the number they are going to choose in 2 seconds!

### **What to do:**

- ◆ Prepare four columns of numbers headed A, B, C, and D as shown here.
- ◆ Present the columns to the class, and ask a volunteer to choose a number between 1 and 15. Have the volunteer write this number on the board (without you seeing it).
- ◆ Ask the volunteer to look at the columns and tell you each column where the number appears (A, B, C, or D)
- ◆ Ask your class to concentrate and then you announce the number they chose!

A	B	C	D
8	4	2	1
13	7	10	5
15	13	3	11
11	5	6	3
10	12	11	13
14	15	14	15
9	14	7	9
12	6	15	7

### **How it works:**

All you have to do is add the sum of the top numbers in each column that the volunteer announced. Let's say that the number was 7. Your volunteer will see that 7 appears in columns B, C, and D. You then add up  $4+2+1=7$ . It is going to work with every other number as well! Now, if you really want to impress everyone, memorize the top numbers (A=8; B=4; C=2; D=1) in the columns and then do it without looking at the strips!

### **Why it works:**

The first row of numbers, 8, 4, 2 and 1 were assigned to columns A, B, C and D respectively. Other numbers, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, and 15 were assigned to selected columns so that the sum of the numbers in the first row of the selected columns equal the assigned number. For example: 3 would be assigned to columns C and D because the number in the first row of the columns C and D are 1 and 2 which sum to 3.

*Note that A, B, C, and D are really the 8, 4, 2 and unit places of the binary number system (all 2 number system). All the decimal numbers are placed in columns corresponding to their binary analog. For example the base 10 number 13 is written as 1101 in binary form which is  $8+4+1=13$  and 13 is assigned to columns A, B, and D while C is left empty.*