

MATH MAGIC AND NUMBERS

1. THE NUMBER IN THE ENVELOPE

This is a game where the instructor will write down a number on a piece of paper and keep it in an envelope after showing it to the class.

Problem 1.1. *Now, a volunteer from the class will come up on the board and perform the following steps one by one with the instructor:*

- (1) *Instructor will write a four digit number.*
- (2) *The student will be asked to write a random four digit number.*
- (3) *The instructor will again write another four digit number.*
- (4) *The student will again be asked to write a random four digit number.*
- (5) *The instructor will again write another four digit number.*
- (6) *The student will again be asked to write a random four digit number.*
- (7) *The instructor will again write another four digit number.*
- (8) *The student will again be asked to write a random four digit number.*
- (9) *The instructor will again write another four digit number.*

Then all the numbers written so far in nine steps will be added. At this time we pull out the number in the envelope. Is the number in the envelope same as the sum we obtained from above? How does the magic trick work?