

**Weekly Problem Competition**

**Sunday, April 6, 2008**

Find the minimum positive integer greater or equal than 9 and satisfies the following condition: for any  $n$  integers  $a_1, a_2, \dots, a_n$  (they could be identical), there always exist nine nonnegative integers  $a_{i_1}, a_{i_2}, \dots, a_{i_9}$  ( $1 \leq i_1 < i_2 < \dots < i_9 \leq n$ ) and  $b_i \in \{4, 7\}$  ( $i = 1, 2, \dots, 9$ ), such that  $b_1 a_{i_1} + b_2 a_{i_2} + \dots + b_9 a_{i_9}$  is a multiple of 9.

**Remarks:**

Due to the fact that Math Club members are out of town on Friday, April 4, the problem for this week, as na exception, is posted on Sunday, April 6, at noon.

Also, since for the last weekly problem we did not get a correct solution, **the prize for this week is doubled.**

The rules of the competition <http://www.math.iit.edu/~weeklyproblem>

You have to submit the solution by email, to [weeklyproblem@math.iit.edu](mailto:weeklyproblem@math.iit.edu)

Please feel free to tell to any undergraduate student about the competition.

**Good Luck !**