



LEWIS AND CLARK COLLEGE
Department of Mathematical Sciences

PUZZLE OF THE “WEEK” (3/17 - 3/30)

Integers 1, 2, ..., 15 are distributed into the cells of a 4×4 table as follows.

| | | | |
|----|----|----|----|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | |

We are allowed to rearrange the numbers in the table according to the following rule.

Rule: A number in a cell which is adjacent to the empty cell (i.e. located immediately above, below, to the left or to the right of the empty cell) can be moved into the empty cell, leaving the currently occupied cell empty.

Thus, for instance, the following is a permissible rearrangement:

| | | | | | | | | | | | | | |
|----|----|----|----|---|----|----|----|----|---|----|----|----|----|
| 1 | 2 | 3 | 4 | → | 1 | 2 | 3 | 4 | → | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | | 5 | 6 | 7 | 8 | | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | | 9 | 10 | 11 | | | 9 | 10 | | 11 |
| 13 | 14 | 15 | | | 13 | 14 | 15 | 12 | | 13 | 14 | 15 | 12 |

Is it possible to obtain the following rearrangement without breaking the rule? Please prove your claim!

| | | | |
|----|----|----|----|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 15 | 14 | |

Congratulations to Joshua Dunham (freshman) and Katie Tsukahara (senior) for solving the last week’s puzzle!

Solvers should include their name, address, and status at the College. Solutions can be mailed to MSC 110 via campus mail or can be placed in *Iva Stavrov’s* mailbox in the Math Department Office. Solutions should be received by 11:00 am on Tuesday March 30th, 2010.