

University of Washington Math Hour Open Olympiad, 2011

Grades 6-7

Additional Problems

6. Eight students participated in a math competition. There were eight problems to solve. Each problem was solved by exactly five people. Show that there are two students who solved all eight problems between them.
7. There are $3n$ checkers of three different colors: n red, n green and n blue. They were used to randomly fill a board with 3 rows and n columns so that each square of the board has one checker on it. Prove that it is possible to reshuffle the checkers within each row so that in each column there are checkers of all three colors. Moving checkers to a different row is not allowed.