

PROBLEM OF THE MONTH, APRIL 2017

Solution - Problem of the Month, March 2016

Congratulations to Jason Belanger, Michael Nino, Laura Xiong, Richard Deokic, Leonard Arkhanhelskyi, and Mazrahul Onim for solving correctly the March Problem!

Find a positive integer n such that the first seven digits of n^2 are all equal to 7.

There are infinitely many solutions, the smallest of which is $n = 8819171$. For this choice of n we have

$$n^2 = 77777777127241$$

Here is the April problem I would like you to give a thought.

In a chess tournament each player played exactly one game against each of the other players. In each game the winner was awarded 1 point, the loser got 0 points, and each of the two players earned $\frac{1}{2}$ point if the game was a tie. After the completion of the tournament, it was found that exactly half of the points earned by each player were earned against the 21 players with the least number of points. (In particular, each of the 21 lowest scoring players earned half of her/his points against the other twenty of the 21). What was the total number of players in the tournament?

Submit your solutions to professor Dan Ismailescu, Mathematics Department via email at dan.p.ismailescu@hofstra.edu, or bring it in person at 103C Roosevelt Hall.