MATHCOUNTS® Problem of the Week Archive

Student Codes – September 8, 2014

Problems

At Austin's school, homeroom teachers assign each student an alpha-numeric code that is used to access student assignments and grades online. This code consists of a student's last initial followed by a 2-digit teacher code and a 2-digit student code. Austin was assigned the code J1216. What is the sum of the distinct prime factors of the numeric part of Austin's code?

Each student at Austin's school also is assigned a unique 4-digit lunch code that is used to access money in a personal lunch account. If the lunch codes are randomly generated, and the first digit cannot be 0, what is the probability that Austin's assigned lunch code is a perfect square?

Lastly, each student at Austin's school is assigned a locker that is identified by a 5-digit locker number. This year, Austin has been assigned a locker on the second floor. If the 230 lockers on the second floor are numbered sequentially, starting with locker number 20000, how many lockers on the second floor have numbers containing five distinct digits?