Problem of the Week #7

11/21/2022 to 12/4/2022

Let $x = 3168$ and $y = 7a2b4c54995d458e1f9g6h3i17862$, where $abcdefghi$ is some permutation of the digits $1, 2, 3, 4, 5, 6, 7, 8, 9$. How many such permtations exist such that the remainder of y upon division by x is exactly 2022?

Solutions for this problem can be submitted to Dr. Brian Miceli at bmiceli@trinity.edu. People who submit solutions will be acknowledged on the next problem. If you like these problems, you may be interested in the Putnam Exam, and more information on the Putnam Exam may be found HERE.

Solutions to the previous problem were submitted by Ziad Aramouni (Lebanon), M.V. Channakeshava (India), Ritwik Chaudhuri (India), Evan Fu (Beaverton, OR), Rob Hill (Gambrills, MD), Hari Kishan (India), Tengiz Kutchava (Georgia, the country), Tin Lam (St. Louis, MO), Yann Michel (Paris, France), François Seguin (Amiens, France), Hicham Selmouni (Paris, France), and Zurab Zakaradze (Georgia, the country).