

Problem 3: All 1's

Let n be a positive integer that is not divisible by 2 or 5. Show that there is a multiple of n whose digits are all 1's.

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.

Posting Date 9/22/2023. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 by e-mail or hard-copy by noon on Friday, October 6, 2023. An email submission must be a single pdf file. Hard copy submissions must be dropped in the file holder at my office door (Hayes 319) and must include a time stamp.