Problem of the Week, Fall 2006 14 September 2006

Circle One: Cadet Faculty Student (non USMA) Faculty (non USMA) Other

Last Name (Please Print):

Problem 2

There is a natural number with the last digit of 4 (e.g. 1004). When you move the digit 4 in front of the number (e.g. 4100), the resulting number becomes the quadruple of the original number. Obviously, 1004 is not such a number. Find a natural number with the above characteristic, or prove that such numbers do not exist logically or empirically.

(Challenge Problem (try it if you dare): What if we change the condition from quadruple to double? The last digit of the original number is still 4. Is it possible or not?)