

Combinatoric question

Source: <http://sci.tech-archive.net/Archive/sci.math/2006-05/msg02119.html>

- *From:* Larry Coon <lmcoon_nospam@xxxxxxx>
 - *Date:* Thu, 11 May 2006 20:04:46 -0700
-

Not homework or anything like that -- just curiosity. Been too long since college math classes, and I didn't turn up anything via Google.

What's the correct approach to problems like, "find how many n -digit numbers have the digit d at least x times." E.g., "find how many 10-digit numbers have at least five sevens."

Easy enough to write a program to iterate through the numbers and count them, but that's cheating. (I cheated anyway and got 16,349,374.)

I tried approaching it as 10,000,000,000 minus the number of permutations of 10 items taken six at a time where none of the digits is seven (i.e., eliminate the permutations where at least six digits are not seven), but that wasn't getting me anywhere.

.