

Homework 6 Problem 2 Solution

Konstantin Miagkov

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Problem 2.

Answer: 6. $35!$ contains a factor of 9, thus it is divisible by 9. Then the sum of its digits is divisible by 9, as per the divisibility criterion we studied earlier. Let the missing digit be x . Then the sum of digits is $138 + x$. $138 = 9 \cdot 15 + 3$ has remainder 3 when divided by 9, which means x needs to have remainder 6 when divided by 9. But x is a digit, so it is between 0 and 9, and therefore must be exactly 6.