

Proposed problem to the American Mathematical Monthly

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Statement of the problem: *Let $\Omega = \{1, 2, 3, \dots\}$ be the set of natural numbers, r a real number such that $0 < r < 1$, and the discrete probability on Ω defined by $P(E) := \frac{1-r}{r} \sum_{k \in E} r^k$. Show that there are uncountable many triple of events (A, B, C) which are mutually independent, (i.e. $P(A \cap B) = P(A)P(B)$, $P(A \cap C) = P(A)P(C)$, $P(C \cap B) = P(C)P(B)$ and $P(A \cap B \cap C) = P(A)P(B)P(C)$).*