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Title: Groups, partitions and representation functions

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Let X be a semigroup written additively and $h \geq 2$ a fixed integer. Let x be an element of X and A_1, \dots, A_h be nonempty subsets of X . Let $R_{A_1+\dots+A_h}(x)$ denote the number of solutions of the equation $a_1 + \dots + a_h = x$, where $a_i \in A_i$. In this paper for $X = \mathbb{N}$ we give a necessary and sufficient condition such that the equality $R_{A_1+A_2}(n) = R_{X \setminus A_1 + X \setminus A_2}(n)$ holds from a certain point on. We study imilar questions when $X = \mathbb{Z}_m$ and in general when $X = G$, where G is a finite additive group.

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