1047-11-455 **Dimitris Koukoulopoulos*** (dkoukou2@illinois.edu), Department of Mathematics, University of Illinois at Urbana-Champaign, Urbana, IL 61801. *Generalized multiplication tables.*

Fix $k \geq 2$. For $N_1, \dots, N_k$ integers consider the $k$-dimensional multiplication table formed by taking all products $n_1 \cdots n_k$ with $n_i \leq N_i$, $1 \leq i \leq k$. Let $A_k(N_1, \dots, N_k)$ be the number of distinct integers that appear in this table. We seek bounds on $A_k(N_1, \dots, N_k)$. In 2004 Ford established the order of magnitude of $A_2(N, N)$. We generalize Ford's result by determining the order of magnitude of $A_k(N, \dots, N)$ when $k > 2$. Finally, we investigate how $A_3(N_1, N_2, N_3)$ behaves when the sizes of $N_1, N_2, N_3$ start varying. (Received February 03, 2009)