Zbl 208.05601
Erdős, Paul
On some applications of graph theory to number-theoretic problems (In English)
Publ. Ramanujan Inst. 1 (1968/69), 131-136 (1969).

The author proves that, if $a_1 < \ldots < a_k \leq n$ is a sequence of integers such that the products $a_i a_j$ are all distinct, then

$$|\max k - \pi(n)| < c\frac{n^{3/4}}{(\log n)^{3/2}}$$

where C is an absolute constant. A similar result had previously been obtained by the author with the condition $a_i \nmid a_j a_k$. The proof, in typical Erdős style, is based on a combinatorial lemma couched in graph theoretic language. This lemma gives an upper bound in terms of t, and t_2 for the number of edges in a graph G containing no circuit of four edges and with t vertices, $x_1, \ldots, x_t$, each edge being incident to one of the vertices x_i, $1 \leq i < t_2 < t_1$.

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Classification:
11B83 Special sequences of integers and polynomials
11B75 Combinatorial number theory