

A problem solved by Netty van Gasteren and me.

Establish whether it is possible to partition six consecutive natural numbers into two triples such that the two triples have equal products.

Solution. A sequence of six consecutive natural numbers contains one or no multiple of 7.

If the sequence of six contains one multiple of 7, any partitioning of it gives rise to two triples with different products, only one of them being a multiple of 7.

If the sequence of six contains no multiple of 7, any partitioning of it gives rise to two triples with different products, because the product of all six reduced modulo 7 equals 6, whereas a square reduced modulo 7 equals 0, 1, 2, or 4.

Hence any partitioning of any six consecutive natural numbers into two triples leads to two triples with different products. (End of Solution.)

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