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Section:

3. Number Theory and Arithmetic Algebraic Geometry

1991 MS Classification: 11
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Arithmetic functions associated with arithmetic-geometric mean quotients

For natural numbers $x_1, ..., x_n$ except $x_1 = ... = x_n$, we denote the arithmetic-geometric mean quotient of the n-th powers of them by $Q(x_1, .., x_n)$. Given positive integers n and x greater than 2, we define $\mathbf{m}(n)$ to be the least integral$Q(x_1, ..., x_n)$ (if such $x_1, ..., x_n$ do not exist, we assign an infinity to it) and $\mathbf{e}(x)$ the least n for which there exits a factorization $x = x_1 ... x_n$ with integral $Q(x_1, ..., x_n)$. Several families with integral $Q(x_1, ..., x_n)$ and upper bounds of quotients are given.

References: Y. Nomura, *Mathematics Magazine* **68** No. 5 (1995), 399 J. S. Sumner, and K. L. Dove, *Mathematics Magazine* **69** No.5 (1996), 386-388