REMARKS

1. We do not know any nontrivial (all different entries) balanced square of order greater than 5. We constructed a magic square of order 10 from the famous pair of orthogonal Latin squares of that order, but we found it not balanced.
2. We do not know an example of a balanced magic square which is not completely balanced.
3. Magic squares of order 6, 7 and 8 appearing in Andrews' book [1] are not balanced.
4. We did not encounter yet a balanced square whose two-way diagonal product sums are equal to the row product sum (really diabolic one) but at least two diagonal product sums alone can be equal as in Fig. 3.

REFERENCES

1. W.S. Andrews, *Magic Squares and Cubes,* Dover, 1960.
2. Jack Chernick, "Solution of the General Magic Square," *Math. Monthly,* March 1938, pp. 172–175.

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Likewise, it is obvious by inspection of a table of Fibonacci primes ($\geqslant 5$) that they are $\equiv 1 \pmod 4$ and thus expressable as the sum of the square of two smaller integers; specifically, it is well known that

$$U_p = U^2_{(p-1)/2} + U^2_{\frac{(p-1)}{2}+1}$$

where U_p is a Fibonacci prime ($\geqslant 5$).

Thus, it is perceived that the Mersenne and Fibonacci primes ($\geqslant 5$) form two mutually exclusive sets; i.e., *no* primes ($\geqslant 5$) can be both a Mersenne and a Fibonacci prime.

REFERENCE

1. William Raymond Griffin, "Mersenne Primes—The Last Three Digits," *J. Recreational Math,* 5 (1), p. 53, Jan., 1972.

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