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Title: On $f(p) + f(q) = f(p + q)$ for all odd primes p and q

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We characterize all nonvanishing multiplicative functions f for which $f(p)+f(q) = f(p+q)$ for all odd primes p, q. As a corollary, a multiplicative function f is the identity function if and only if $f(3) = 3$ and $f(p) + f(q) = f(p + q)$ for all odd primes p, q. Two questions posed by Claudia A. Spiro in 1992 are answered negatively. Two new conjectures are posed.

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