**Problem.** Find all rings (assumed only to be associative but not necessarily commutative or with an identity) $R$ up to isomorphism for which the following properties hold.

1. The additive group $(R, +)$ of $R$ is cyclic, and
2. Every multiplicative map $f\colon R \to R$ is additive, that is, every $f\colon R \to R$ which satisfies $f(xy) = f(x)f(y)$ for all $x, y \in R$ also satisfies $f(x + y) = f(x) + f(y)$ for all $x, y \in R$.