This study provides a comprehensive overview of changes in the autoregressive-moving-average model (ARMA) when applied to various functions. First, the necessary and sufficient condition for a weakly stationary stochastic process described by ARMA is given. Next, some particular transformations of ARMA processes are presented: first, non-correlated and generic sums of ARMA processes; next, products of independent and dependent Gaussian ARMA processes; and finally, time aggregations, namely, systematic sampling and temporal aggregations. Tables are included to clearly summarize special cases of particular transformations. Some of these cases are then demonstrated through concrete examples. In addition to theoretical results, extensive numerical simulation in statistical software R is also given, which systematically covers the obtained results.