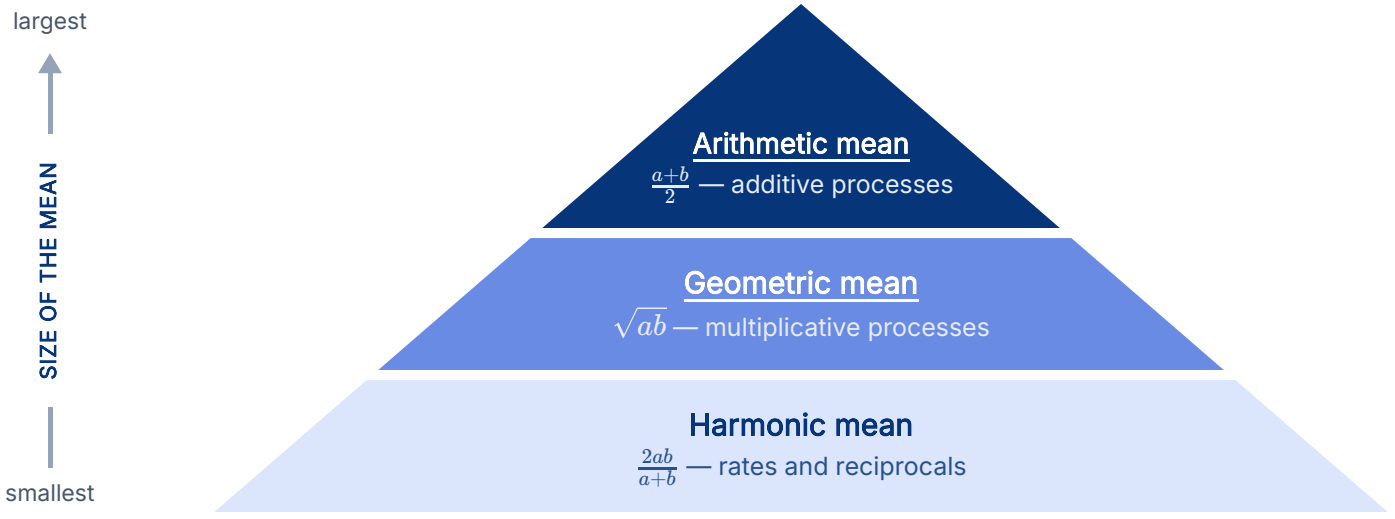
BEFORE YOU READ

Three averages, one fixed order

For any set of positive numbers the three means always line up the same way: the harmonic mean never exceeds the geometric mean, which never exceeds the arithmetic mean.



TAKEAWAY

Equality only when all numbers are equal

The chain becomes equality throughout exactly when all the numbers are identical. The $G \leq A$ part is used extensively in optimization and in proving inequalities.