Arithmetic and geometric returns

Performance arithmetic | Original synthetic example | Edition 2026-11-26

The arithmetic mean averages period returns, while compounded wealth multiplies their growth factors. Volatility can leave compounded wealth lower even when the arithmetic average is unchanged.

FORMULA Geometric mean = product(1 + r)^(1/n) - 1

SCENARIO 01: Two-period arithmetic mean fixed at 1%



WORKED EXAMPLE

Returns 11% and -9% average 1% arithmetically; geometric mean is 0.5037%.

COMMON MISTAKE

Adding returns across periods treats sequential percentage changes as if they had a constant base.

BEFORE YOU USE THE CALCULATION

1. Order sequential growth factors.
2. Keep cash flows separate.
3. Do not average incompatible time periods.

COMPARE TWO MORE INPUT SETS

Scenario 05: Two-period arithmetic mean fixed at 3%. Returns 13% and -7% average 3% arithmetically; geometric mean is 2.51%.

Scenario 10: Two-period arithmetic mean fixed at 5.5%. Returns 15.5% and -4.5% average 5.5% arithmetically; geometric mean is 5.02%.

Synthetic values are not historical market data. Educational material; trading can result in substantial losses.