

APR and EAR

We *talk* about rates of return in annual terms (doing so allows for some level of comparability across a range of “investing” situations – the ad for a 3-month bank CD still presents an annual interest rate). But we must *work* with a rate that corresponds to the timing of the cash flows and compounding.

Complication: the annual rate we *talk* about could be either an Annual Percentage Rate (APR, not adjusted for the impact of compounding within the year) or an Effective Annual Rate (EAR, adjusted for compounding within the year).

If we want you to *work* with a periodic rate of 2.6% per quarter, then in the *talking* phase we could tell you either that:

the Annual Percentage Rate (APR) is 10.4% per year
(just take $.104 \div 4 = .026$) OR

the Effective Annual Rate (EAR) is 10.8127% per year
(take $\sqrt[4]{1.108127} - 1 = .026$)

If we want you to *work* with a periodic rate of .43% per month, then in the *talking* phase we could tell you either that:

APR is 5.16% per year ($.0516 \div 12 = .0043$) OR
EAR is 5.2838% per year ($\sqrt[12]{1.052838} - 1 = .0043$)

Our concern usually is not to convert an APR to an EAR or an EAR to an APR. Our goal usually is to convert either an APR or EAR that we *talk* about to a “working” periodic (monthly, quarterly, semiannual, or other) rate to use as the r in a time value computation.