



Effective Annual Rate & Nominal Rate

The effective annual rate calculation provides a means of comparing the nominal rates of various financial instruments. The **Nom** and **Eff** functions convert from effective to nominal and nominal to effective rates, respectively.

Objectives:

- Given a nominal rate and the number of compounding periods, determine the effective annual rate.
- Given an effective annual yield and the number of compounding periods, determine the nominal interest rate.

Effective annual rate is the amount of simple interest that is equivalent to an interest rate compounded during a year. The effective rate is frequently needed in other computations and is calculated using the formula

$$r = \left(1 + \frac{j}{m}\right)^m - 1,$$

where j is the nominal rate, m is the number of compounding periods per year, and r is the effective annual rate.

Example 1:

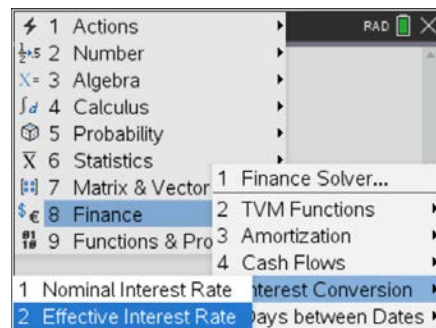
Which provides a better yield, simple interest of 6.15% or interest of 6% compounded quarterly?

Compute the effective rate for 6% compounded quarterly.

- Press **on**, and select **New** to start a new document. Select **Add Calculator**.

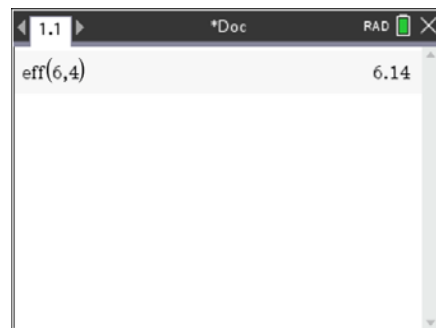
Note: To round computations to two decimal places, change the Display Digits setting in the Documents Settings to **Fix 2**.

Press **Menu > Finance > Interest Conversion** and select **Effective Interest Rate**.



- The syntax is **eff**(nominal rate, compounding periods per year). Complete the command by typing 6 4 .

A rate of 6% compounded quarterly gives an effective rate of 6.14%, so simple interest of 6.15% provides a better yield.





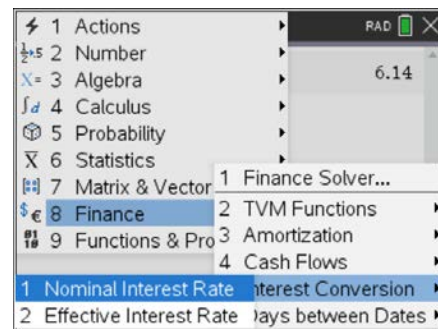
If you know the effective rate of interest and the number of compounding periods, you can find the nominal rate of interest using the **Nom(** command.

Example 2:

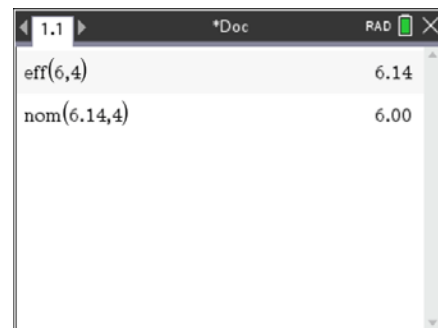
What is the nominal interest rate if the effective annual yield is 6.14% compounded quarterly?

The **nom(** command computes the nominal interest rate.

1. Press **Menu > Finance > Interest Conversion**, and select **Nominal Interest Rate**.



2. The syntax is **nom(effective rate, compounding periods)**. Complete the command by typing 6.14 **,** 4 **enter**.



If the effective annual yield is 6.14% compounded quarterly, the nominal interest rate is 6%.