



hp calculators

HP 10BII [Mortgage/Loan Basics](#)

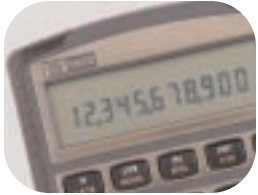
[HP 10BII Shortcuts](#)

[Your Checklist For Calculating a Mortgage Payment](#)

[More Practice Solving for Loan Payments](#)



See also the other available mortgage topics, such as [Amortization](#), [Mortgages with Balloon Payments](#), and [Mortgages with Loan Fees \("Points"\)](#).







 hp calculators




HP 10BII Mortgage/Loan Basics

HP 10BII Shortcuts

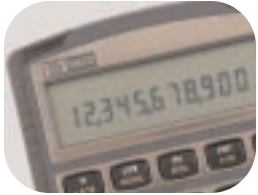
Before reading here, it is essential that you understand [Time Value of Money \(TVM\) Basics](#), so if necessary, stop now and read that before continuing here....

Most mortgages and loans quote their interest rate in annualized terms, but the payments are seldom annual (usually monthly). Since we “think” in annual terms, but all the TVM calculations need to work in actual periods and actual interest (monthly, for example), the HP 10BII has a simple way to allow this. It has a special storage register, **P/YR** (see also [Registers, Storage and Memory](#)), where you specify the **number of periods per year** for the situation. This lets the HP 10BII translate the annualized terms of a loan into the periodic numbers it needs to do the actual calculations.

To specify the number of periods per year, you simply key in that number and press . (This is the **gold**-shifted  key—*don't confuse this with* , which is the **gold**-shifted  key—read below for what that's used for.)

Once you have specified P/YR, you can then “think” in annualized terms—both for the number of periods and the interest rate: Rather than entering the number of periods and pressing , you can instead key in the number of years and press . And you can simply key in the annualized nominal interest rate and press —the machine will convert this to the actual periodic rate internally whenever it needs to.

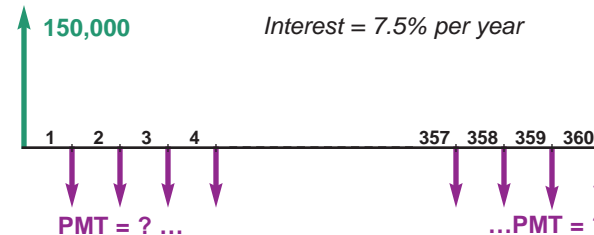
These shortcuts simply make life a little easier—but **be careful!** Do not get into the habit of forgetting about the value stored in P/YR (assuming, for example, that it's always 12—for monthly periods and payments). Some mortgages, for example, have payments every two weeks; and other sorts of loans or leases have quarterly payments. Those payments will be incorrectly calculated if you use a P/YR of 12! (If payments are every two weeks, that would be 26 periods per year: P/YR = 26. For quarterly payments, P/YR = 4.)



















HP 10BII Mortgage/Loan Basics

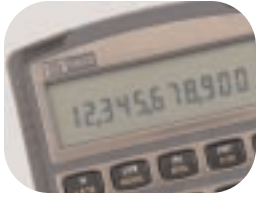
Your Checklist For Calculating a Mortgage Payment:

As you know, it's always best to draw a cash flow diagram—a picture of any investment situation, and that includes a loan or mortgage. Here's a typical example—a real estate loan with monthly payments:



And here's your checklist for calculating that monthly payment amount correctly:

- 1. Set the payment mode.** In this example, press , if needed, to turn the **BEGIN** annunciator **off**. The payments are in *arrears* here—at the end of each month—which is conventional with most mortgages. (By contrast, leases and rental agreements typically use **BEGIN** mode; the first payment is due immediately at signing.)
- 2. Key in the number of payments per year and press .** In this case, press 12 .
- 3. Key in the number of years in the mortgage and press .** Here, press 30 .
- 4. Key in the annualized interest rate and press .** In this example, press 7.5 .
- 5. Key in the mortgage loan amount and press .** In this case, press 150000 . (If you adopt the viewpoint of lender rather than borrower, you'd use  to make this number negative before pressing .)
- 6. Key in 0 and press .** In this example, press 0 . This is for a fully amortized (fully paid-off) loan situation, where there is no balance due at the end of the loan term—thus FV is \$0. (Many other loan situations are possible. See, for example, [Mortgage with a Balloon Payment](#).) It's possible to skip this step by pressing  as a preliminary step before starting this checklist. For a discussion as to why that's not necessarily a good thing to do habitually, read the discussion on [Clearing, Editing and Correcting Errors](#).
- 7. Press  to calculate the monthly mortgage payment.** For this example, pressing  will get **-1,048.82**. (If you adopt the viewpoint of lender rather than borrower, this value will be positive, not negative.)



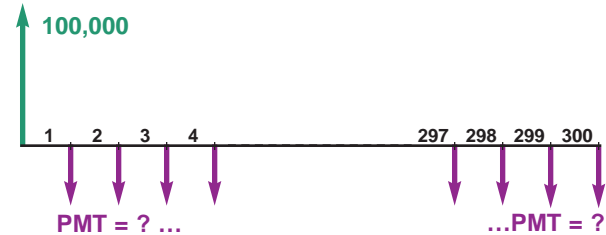
hp calculators

HP 10BII Mortgage/Loan Basics

More Practice Solving for Mortgage Payments

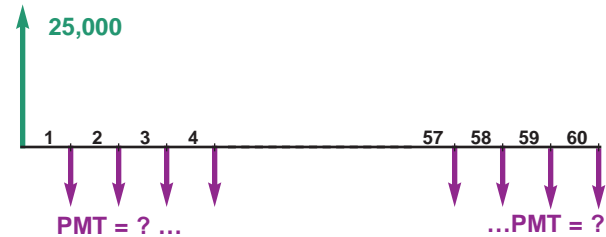
Problem: Find the monthly payment on your \$100,000, 25-year mortgage at 7%.

Solution: (**BEG/END** , if needed, to set END mode)
12 **P/YR** 25 **xP/YR**
7 **I/YR**
100000 **PV**
0 **FV** **PMT**... Result: **-706.78**



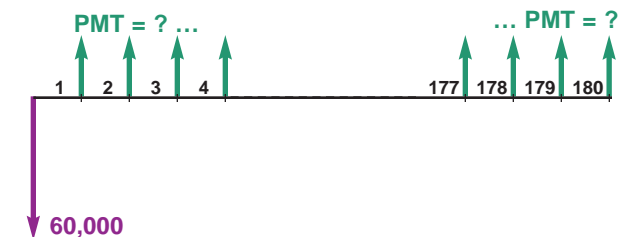
Problem: Find the monthly payment on your \$25,000, 5-year car loan at 2.5%

Solution: (**BEG/END** , if needed, to set END mode)
5 **xP/YR**
2.5 **I/YR**
25000 **PV**
0 **FV** **PMT**... Result: **-443.68**



Problem: Find the monthly payment on a \$60,000, 15-year mortgage at 8.25%. For this situation, assume that you're the lender.

Solution: (**BEG/END** , if needed, to set END mode)
15 **xP/YR**
8.25 **I/YR**
60000 **+/-** **PV**
0 **FV** **PMT**... Result: **582.08**



Of course, there are many other calculations possible with mortgages—not just the payment amount and not just for fully amortized loan situations. See, for example, [Amortization](#), [Mortgages with Balloon Payments](#), and [Mortgages with Loan Fees \(“Points”\)](#).