



hp calculators

HP 12C Mortgage/Loan Basics



[HP 12C Shortcuts: For MONTHLY Payment Only](#)

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

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



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HP 12C Shortcuts: For MONTHLY Payments Only

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 these days are arranged with monthly payments (and therefore monthly compounding interest—remember that the same period define both the interest rate and the payment). And because monthly payments are so common, particularly in real estate loans, there are two keys on the HP 12C that save you time and keystrokes in translating the annualized terms of a loan into the monthly numbers needed by the HP 12C to calculate the payment.

g 12x multiplies the given value by 12, then stores the result into the **n** register. This makes it easier for you to key in the term of a mortgage in whole years. The calculator will take those years and convert them to months (by multiplying by 12) before storing the result into **n**, thus saving you the multiplication keystrokes.

g 12÷ divides the given value by 12, and then automatically stores the result into the **i** register. This makes it easier for you to key in the annualized (“nominal”) interest rate of a mortgage. The calculator will take that rate and convert it to the actual monthly interest rate (by dividing by 12) before storing the result into **i**, thus saving you the division keystrokes.

Compare the keystrokes for finding the monthly payment on a 30-year, \$150,000 mortgage at 7.5%.

Without shortcuts: (**g END**, if necessary)
30 **ENTER** 12 **×** **n**
7.5 **ENTER** 12 **÷** **i**
150000 **PV**
0 **FV**
PMT... Result: -1,048.82

With shortcuts: (**g END**, if necessary)
30 **g 12x**
7.5 **g 12÷**
150000 **PV**
0 **FV**
PMT... Result: -1,048.82

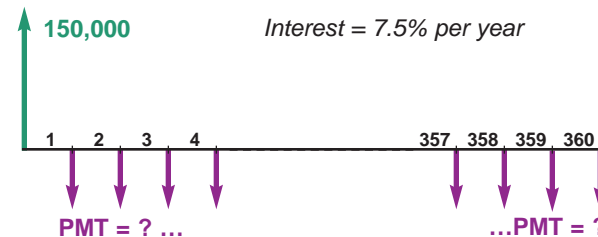
Either way you get the same result—the shortcuts simply make life a little easier. But **be careful!** Do not get into the habit of using **g 12x** and **g 12÷** in all loan situations. Some mortgages, for example, have payments every two weeks; and other sorts of loans or leases have quarterly payments. **NONE** of those payments will be correctly calculated if you try to use **g 12x** or **g 12÷** !

















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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 years in the mortgage and press .** In this example, press 30 . (Reminder: This applies only to monthly payment situations. For any other situation, where there are more or fewer than 12 payment periods per year, you must do the arithmetic yourself to find the total periods in the loan.)
3. **Key in the annualized interest rate and press .** In this example, press 7.5 . (Again: This applies only to monthly payment situations. For any other situation, where there are more or fewer than 12 interest periods per year, you'd have to do the arithmetic yourself to compute the loan's actual periodic interest rate.)
4. **Key in the mortgage loan amount and press .** In this example, press 150000 . (If you adopt the viewpoint of lender instead of borrower, you'd use  to make this value negative before pressing .)
5. **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](#).
6. **Press  to calculate the monthly mortgage payment.** For this example, pressing  will get **-1,048.82**. (If you adopt the viewpoint of lender instead of borrower, this value will be positive, not negative.)



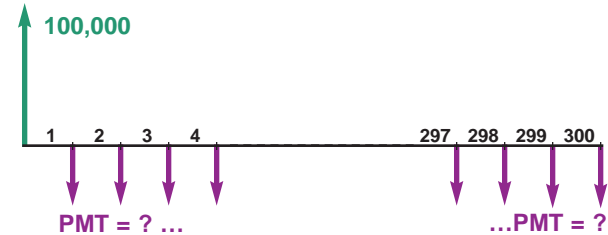
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More Practice Solving for Mortgage Payments

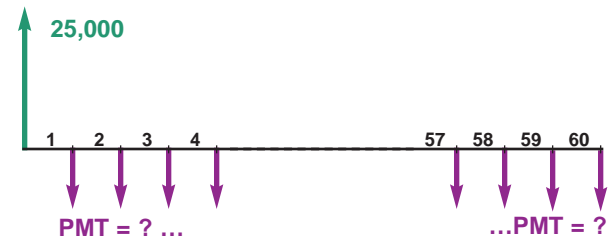
Problem: Find the monthly payment on your \$100,000, 25-year mortgage at 7%.

Solution: (9 END, if necessary)
25 (9 12x)
7 (9 12÷)
100000 (PV)
0 (FV) (PMT)... Result: -706.78



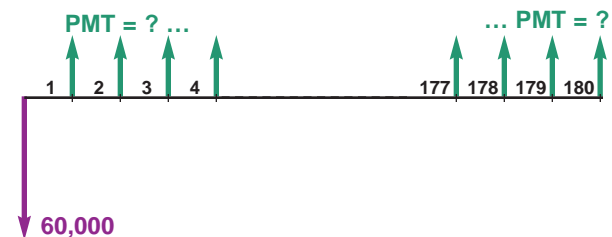
Problem: Find the monthly payment on your \$25,000, 5-year car loan at 2.5%

Solution: (9 END, if necessary)
5 (9 12x)
2.5 (9 12÷)
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: (9 END, if necessary)
15 (9 12x)
8.25 (9 12÷)
60000 (CHS) (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 \(“Points”\)](#).