

PMT function

PMT, one of the [financial functions](#), calculates the payment for a loan based on constant payments and a constant interest rate.

Use the [Excel Formula Coach](#) to figure out a monthly loan payment. At the same time, you'll learn how to use the PMT function in a formula.

Syntax

`PMT(rate, nper, pv, [fv], [type])`

Note: For a more complete description of the arguments in PMT, see the PV function.

The PMT function syntax has the following arguments:

- **Rate** Required. The interest rate for the loan.
- **Nper** Required. The total number of payments for the loan.
- **Pv** Required. The present value, or the total amount that a series of future payments is worth now; also known as the principal.
- **Fv** Optional. The future value, or a cash balance you want to attain after the last payment is made. If fv is omitted, it is assumed to be 0 (zero), that is, the future value of a loan is 0.
- **Type** Optional. The number 0 (zero) or 1 and indicates when payments are due.

Set type equal to	If payments are due
0 or omitted	At the end of the period
1	At the beginning of the period

Remarks

- The payment returned by PMT includes principal and interest but no taxes, reserve payments, or fees sometimes associated with loans.
- Make sure that you are consistent about the units you use for specifying rate and nper. If you make monthly payments on a four-year loan at an annual interest rate of 12 percent, use 12%/12 for rate and 4*12 for nper. If you make annual payments on the same loan, use 12 percent for rate and 4 for nper.

Tip To find the total amount paid over the duration of the loan, multiply the returned PMT value by nper.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and

then press Enter. If you need to, you can adjust the column widths to see all the data.

Data	Description	
8%	Annual interest rate	
10	Number of months of payments	
\$10,000	Amount of loan	
Formula	Description	Result
=PMT(A2/12,A3,A4)	Monthly payment for a loan with terms specified as arguments in A2:A4.	(\$1,037.03)
=PMT(A2/12,A3,A4,,1)	Monthly payment for a loan with with terms specified as arguments in A2:A4, except	(\$1,030.16)

Data	Description	
	payments are due at the beginning of the period.	
Data	Description	
6%	Annual interest rate	
18	Number of months of payments	
\$50,000	Amount of loan	
Formula	Description	Live Result
PMT(A9/12,A10*12,0,A11)	Amount to save each month to have \$50,000 at the end of 18 years.	(\$129.08)

IPMT function

This article describes the formula syntax and usage of the **IPMT** function in Microsoft Excel.

Description

Returns the interest payment for a given period for an investment based on periodic,

constant payments and a constant interest rate.

Syntax

`IPMT(rate, per, nper, pv, [fv], [type])`

The IPMT function syntax has the following arguments:

- **Rate** Required. The interest rate per period.
- **Per** Required. The period for which you want to find the interest and must be in the range 1 to nper.
- **Nper** Required. The total number of payment periods in an annuity.

- **Pv** Required. The present value, or the lump-sum amount that a series of future payments is worth right now.
- **Fv** Optional. The future value, or a cash balance you want to attain after the last payment is made. If fv is omitted, it is assumed to be 0 (the future value of a loan, for example, is 0).
- **Type** Optional. The number 0 or 1 and indicates when payments are due. If type is omitted, it is assumed to be 0.
-

Set type equal to	If payments are due
0	At the end of the period
1	At the beginning of the period

Remarks

- Make sure that you are consistent about the units you use for specifying rate and nper. If you make monthly payments on a four-year loan at 12

percent annual interest, use 12%/12 for rate and 4*12 for nper. If you make annual payments on the same loan, use 12% for rate and 4 for nper.

- For all the arguments, cash you pay out, such as deposits to savings, is represented by negative numbers; cash you receive, such as dividend checks, is represented by positive numbers.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data	Description
10.00%	Annual interest

Data	Description	
1	Period for which you want to find the interest paid.	
3	Years of loan	
\$8,000	Present value of loan	
Formula	Description	Live Result
=IPMT(A2/12, A3, A4*12, A5)	Interest due in the first month for a loan with the terms in A2:A5.	(\$66.67)
=IPMT(A2, 3, A4, A5)	Interest due in the last year for a loan with the same terms, where payments are made yearly.	(\$292.45)

PPMT function

This article describes the formula syntax and usage of the **PPMT** function in Microsoft Excel.

Description

Returns the payment on the principal for a given period for an investment based on

periodic, constant payments and a constant interest rate.

Syntax

PPMT(rate, per, nper, pv, [fv], [type])

The PPMT function syntax has the following arguments:

- **Rate** Required. The interest rate per period.
- **Per** Required. Specifies the period and must be in the range 1 to nper.
- **Nper** Required. The total number of payment periods in an annuity.

- **Pv** Required. The present value — the total amount that a series of future payments is worth now.
- **Fv** Optional. The future value, or a cash balance you want to attain after the last payment is made. If fv is omitted, it is assumed to be 0 (zero), that is, the future value of a loan is 0.
- **Type** Optional. The number 0 or 1 and indicates when payments are due.

Set type equal to	If payments are due
0 or omitted	At the end of the period
1	At the beginning of the period

Remarks

Make sure that you are consistent about the units you use for specifying rate and nper. If you make monthly payments on a four-year loan at 12 percent annual

interest, use 12%/12 for rate and 4*12 for nper. If you make annual payments on the same loan, use 12% for rate and 4 for nper.

Examples

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data	Argument description	
10%	Annual interest rate	
2	Number of years for the loan	
\$2,000.00	Amount of loan	
Formula	Description	Result

Data	Argument description	
=PPMT(A2/12, 1, A3*12, A4)	Principal payment for month 1 of the loan	(\$75.62)
Data	Argument description	
8%	Annual interest rate	
10	Number of years for the loan	
\$200,000.00	Amount of loan	
Formula	Description (Result)	Live Result
=PPMT(A8, A9, 10, A10)	Principal payment for year 10 of the loan	(\$27,598.05)

