Loan Outstanding Balance and Interest Paid to Date

Level payment, outstanding balance after a number of payments, interest and principal paid so far and total interest for an amortising loan.

Method: Amortising loan with level payments

Input parameters

Unit system: SI

Parameter	Value	Unit
Amount borrowed	500,000	
Nominal annual interest rate	9.0000	%
Term in years	20.000	
Payments per year	Monthly	
Payments already made	60.000	

Calculated results

Parameter	Value	Unit
Level payment per period	4,498.6	
Outstanding balance after k payments	443,535	
Interest paid to date	213,453	
Principal repaid to date	56,465	
Total interest over the term	579,671	
Interest part of the next payment	3,326.5	

Notes for this case

• With rate i = r/m per period and n = mN payments, the level payment is A = P·i(1 + i)^n/[(1 + i)^n − 1]. The balance after k payments is the borrowed amount grown k periods less the payments grown to that date: B_k = P(1 + i)^k − A[(1 + i)^k − 1]/i, equal to the present worth of the payments still to come. Early payments are mostly interest; the interest part of the next payment is B_k·i.

Formula and method

$$A = P\frac{i(1+i)^n}{(1+i)^n - 1}, \quad B_k = P(1+i)^k - A\frac{(1+i)^k - 1}{i}$$

Variables

P	Amount borrowed	-
r	Nominal annual interest rate	-
N_y	Term in years	-
m	Payments per year	-
k	Payments already made	-
A	Level payment per period	-
B_k	Outstanding balance after k payments	-
I_k	Interest paid to date	-
P_k	Principal repaid to date	-
I_{tot}	Total interest over the term	-
I_{k+1}	Interest part of the next payment	-

Method and standards

Loan balance.

Assumptions and limits

- Fixed rate; payments at the end of each period; no fees.

References

Amortising loan with level payments

Report details

Report reference	FCC-FS93-CC8V (the same inputs always give the same reference)
Generated	23 November 2026, 17:51 UTC
Calculator	Loan Outstanding Balance and Interest Paid to Date
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/economics/loan-balance-amortisation

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.