

mortgagemath at a glance



MortgageMath
Precise Loan Amortization in Python

mortgagemath 0.5.0 · rendered 2026-04-30

Produces fixed-rate and adjustable-rate mortgage amortization schedules that reproduce **published lender, regulator, and textbook examples to the cent**. Decimal end-to-end, stdlib-only.

Install and use

```
pip install mortgagemath
python -m mortgagemath          # post-install self-check

mortgagemath payment --principal 300000 --rate 6.5 --term-months 360
mortgagemath schedule --principal 300000 --rate 6.5 --term-months 360 \
  --format csv > schedule.csv
```

Worked example

```
from decimal import Decimal
from mortgagemath import LoanParams, periodic_payment, amortization_schedule

loan = LoanParams(
    principal=Decimal("300000"),
    annual_rate=Decimal("6.5"),
    term_months=360,
)
pmt = periodic_payment(loan)          # Decimal("1896.21")
sched = amortization_schedule(loan)   # closes at $0.00 on payment 360
```

#	Payment	Interest	Principal	Balance
1	\$ 1,896.21	\$ 1,625.00	\$ 271.21	\$ 299,728.79
240	\$ 1,896.21	\$ 909.89	\$ 986.32	\$ 166,992.91
360	\$ 1,889.51	\$ 10.18	\$ 1,879.33	\$ 0.00

Loan parameters

A wide variety of mortgage types can be represented by setting the parameters below. A robust test suite validates schedules from financial textbooks, regulatory documents, and other sources for US, UK, and Canadian mortgages by choosing the right settings.

Required.

- **principal** — original loan amount (Decimal)
- **annual_rate** — annual interest rate as a percentage (Decimal)
- **term_months** — loan term in calendar months

Optional.

- **amortization_period_months** — set when \neq term_months for balloon loans (Fannie Mae §1103 SARM, Canadian fixed-term mortgages)
- **start_date** — issue date; required for ACTUAL_360
- **day_count** — THIRTY_360 (US residential) · ACTUAL_360 (US commercial / SARM)
- **balance_tracking** — ROUND_EACH (lender statements) · CARRY_PRECISION (Excel / CRE textbook)
- **payment_rounding / interest_rounding** — ROUND_UP (US lender default) · ROUND_HALF_UP · ROUND_HALF_EVEN
- **compounding** — MONTHLY (US) · SEMI_ANNUAL (Canadian j_2) · ANNUAL
- **payment_frequency** — MONTHLY · SEMI_MONTHLY · BIWEEKLY · WEEKLY · QUARTERLY · ANNUAL
- **rate_schedule** — list of RateChange (rate change at any payment, optional recast, optional payment cap with neg-am)