# 💰 Compound interest

Date _____ Topic 1/3

CUES · QUESTIONS

1. Compound interest formula?
2. $n$ for semi-annually / quarterly / monthly?
3. Rule of 72 at 9%?
4. Present value means…

Cover the notes. Answer each cue from memory.

NOTES

**1 · Worked example** Copy one example from the page. Next to each line write WHY in a few words.

**2 · Fill in the blanks** Cover the steps and redo it. Leave a gap where you are unsure.

**3 · Your turn** A new question. Then check it against the answer.

SUMMARY — IN MY OWN WORDS, TWO SENTENCES

CUES · QUESTIONS

1. TVM: what do N, I%, PV, PMT, FV mean?
2. P/Y and C/Y for a Canadian mortgage paid monthly?
3. Savings plan → which formula?
4. Loan → which formula?

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SUMMARY — IN MY OWN WORDS, TWO SENTENCES

CUES · QUESTIONS

1. Value after $t$ years at depreciation rate $r$?
2. Net cost of buying a car?
3. One advantage and one drawback of leasing?
4. Unrecoverable costs of owning a home?

Cover the notes. Answer each cue from memory.

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SUMMARY — IN MY OWN WORDS, TWO SENTENCES

# 💰 Financial Literacy • Formula and trap sheet

Everything you need before a test, on the fewest pages. Fold it and keep it in your binder.

## Compound interest

### FORMULAS

$A = P\left(1 + \frac{r}{n}\right)^{nt}$ — Compound interest (future value of a lump sum)

$P = \frac{A}{\left(1 + \frac{r}{n}\right)^{nt}}$ — Present value: how much to invest now

$I = A - P$ — Interest earned

### REMEMBER

- $A = P\left(1 + \frac{r}{n}\right)^{nt}$: $r$ as a decimal, $n$ = periods per year, exponent $nt$.
- Per period $i = \frac{r}{n}$; periods $= nt$ (monthly for 6 years = $72$).

### WATCH OUT

- $r = 4\ \times \rightarrow r = 0.04$.
- Exponent $t\ \times \rightarrow nt$: quarterly for 5 years is $20$ periods.

## Loans & investments with regular payments

### FORMULAS

$FV = PMT \cdot \frac{(1+i)^n - 1}{i}$ — Future value of regular deposits

$PV = PMT \cdot \frac{1 - (1+i)^{-n}}{i}$ — Present value (loan amount) of regular payments

$PMT = \frac{PV \cdot i}{1 - (1+i)^{-n}}$ — Loan payment

### REMEMBER

- Saving with equal deposits → $FV$. Loan → amount borrowed is $PV$; solve for $PMT$.
- $i$ = rate per PAYMENT period, $n$ = number of payments (monthly, 5 years → $n = 60$).

### WATCH OUT

- $i = 0.069$ for monthly payments ✕ → $i = 0.069/12$, $n$ in months.
- Total of payments = interest ✕ → subtract the amount borrowed.

## Buy, lease or rent?

### FORMULAS

$V = P(1-r)^t$ — Depreciation (value after $t$ years)

$V = P(1+r)^t$ — Appreciation

$\text{net cost of buying} = \text{down} + \text{all payments} - \text{resale value}$ — Net cost of buying

### REMEMBER

- Buy: net cost = total paid − value at the end. Lease: down + payments + end fees; you own nothing.
- Depreciation compounds: $V = P(1-r)^t$; appreciation: $V = P(1+r)^t$.

### WATCH OUT

- Taking 15% of the ORIGINAL price every year ✕ → 15% of that year's value.
- Comparing monthly payments only ✕ → compare total cost minus what you own at the end.