💰 Compound interest

复利

Date · 日期 _____ Topic · 知识点 1/3

CUES · QUESTIONS
提示 · 问题

1. Compound interest formula?
   > 复利公式?
2. n for semi-annually / quarterly / monthly?
   > 半年 / 季度 / 按月复利的 n?
3. Rule of 72 at 9%?
   > 9% 时的 72 法则?
4. Present value means…
   > 现值是指……

Cover the notes. Answer each cue from memory. · 盖住右边的笔记，凭记忆回答每个提示。

NOTES
笔记

1 · Worked example · 1 · 看一道例题 Copy one example from the page. Next to each line write WHY in a few words. · 抄一道例题，每一行旁边用几个字写「为什么」。

2 · Fill in the blanks · 2 · 填空题 Cover the steps and redo it. Leave a gap where you are unsure. · 盖住步骤自己重做，不确定的地方先空着。

3 · Your turn · 3 · 自己做 A new question. Then check it against the answer. · 做一道新题，然后对答案。

SUMMARY — IN MY OWN WORDS, TWO SENTENCES
小结——用自己的话，两句

💰 Loans & investments with regular payments

定期付款的贷款与投资

Date · 日期 _____ Topic · 知识点 2/3

CUES · QUESTIONS
提示 · 问题

1. TVM: what do N, I%, PV, PMT, FV mean?
   > TVM：N、I%、PV、PMT、FV 各是什么?
2. P/Y and C/Y for a Canadian mortgage paid monthly?
   > 按月还款的加拿大房贷，P/Y 与 C/Y?
3. Savings plan → which formula?
   > 储蓄计划用哪个公式?
4. Loan → which formula?
   > 贷款用哪个公式?

Cover the notes. Answer each cue from memory. · 盖住右边的笔记，凭记忆回答每个提示。

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SUMMARY — IN MY OWN WORDS, TWO SENTENCES
小结——用自己的话，两句

💰 Buy, lease or rent?

买、租赁还是租用?

Date · 日期 _____ Topic · 知识点 3/3

CUES · QUESTIONS

提示 · 问题

1. Value after t years at depreciation rate r?
   > 贬值率 r，t 年后的价值?
2. Net cost of buying a car?
   > 买车的净成本?
3. One advantage and one drawback of leasing?
   > 租赁的一个好处和一个缺点?
4. Unrecoverable costs of owning a home?
   > 买房「拿不回来的钱」包括?

Cover the notes. Answer each cue from memory. · 盖住右边的笔记，凭记忆回答每个提示。

NOTES

笔记

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SUMMARY — IN MY OWN WORDS, TWO SENTENCES

小结——用自己的话，两句

💰 Financial Literacy

金融素养

• Formula and trap sheet

公式与陷阱一页纸

Everything you need before a test, on the fewest pages. Fold it and keep it in your binder. · 考前要看的东西，压缩在尽量少的页数里。折起来放进文件夹。

Compound interest · 复利

FORMULAS · 公式

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

> 复利公式（一次性存入的终值）

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

> 现值：现在需要投入多少

$I = A - P$ — Interest earned

> 利息＝终值－本金

REMEMBER · 记住

- $A = P\left(1 + \frac{r}{n}\right)^{nt}$: r as a decimal, n = periods per year, exponent nt.
  > $A = P\left(1 + \frac{r}{n}\right)^{nt}$：$r$ 用小数，n 是每年计息次数，指数是 nt。
- Per period $i = \frac{r}{n}$; periods $= nt$ (monthly for 6 years = 72).
  > 每期利率 $i = \frac{r}{n}$；期数 $= nt$（按月 6 年＝72 期）。

WATCH OUT · 当心

- $r = 4\% \rightarrow r = 0.04$.
  > $r = 4\% \rightarrow r = 0.04$。
- Exponent $t \times \rightarrow nt$: quarterly for 5 years is 20 periods.
  > 指数用 $t \times \rightarrow$ 用 nt：按季 5 年是 20 期。

Loans & investments with regular payments · 定期付款的贷款与投资

FORMULAS · 公式

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

> 定期存款的终值

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

> 定期付款的现值（贷款额）

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

> 贷款每期还款额

REMEMBER · 记住

- Saving with equal deposits → FV. Loan → amount borrowed is PV; solve for PMT.
  > 定期等额存款 → 求终值 FV。贷款 → 借款额是现值 PV，求每期还款 PMT。
- i = rate per PAYMENT period, n = number of payments (monthly, 5 years → $n = 60$).
  > i＝每个还款期的利率，n＝还款次数（按月 5 年 → $n = 60$）。

WATCH OUT · 当心

- $i = 0.069$ for monthly payments $\times \rightarrow i = 0.069/12$, n in months.
  > 按月还款用 $i = 0.069$ $\times \rightarrow i = 0.069/12$，$n$ 按月计。
- Total of payments = interest $\times \rightarrow$ subtract the amount borrowed.
  > 把还款总额当利息 $\times \rightarrow$ 要减去借款额。

Buy, lease or rent? · 买、租赁还是租用?

FORMULAS · 公式

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

> 贬值（t 年后的价值）

$V = P(1 + r)^t$ — Appreciation

> 升值

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

Net cost of buying

> 买的净成本

REMEMBER · 记住

- Buy: net cost = total paid – value at the end. Lease: down + payments + end fees; you own nothing.
  > 买：净成本＝总支出 – 期末残值。租：首付＋月供＋到期费用；到期什么都不归你。
- Depreciation compounds: $V = P(1 - r)^t$; appreciation: $V = P(1 + r)^t$.
  > 贬值是复利式的：$V = P(1 - r)^t$；升值：$V = P(1 + r)^t$。

WATCH OUT · 当心

- Taking 15% of the ORIGINAL price every year ✕ → 15% of that year's value.
  > 每年都减原价的 15% ✕ → 每年减当年价值的 15%。
- Comparing monthly payments only ✕ → compare total cost minus what you own at the end.
  > 只比月供 ✕ → 比总成本减去期末拥有的价值。