周一/9.9

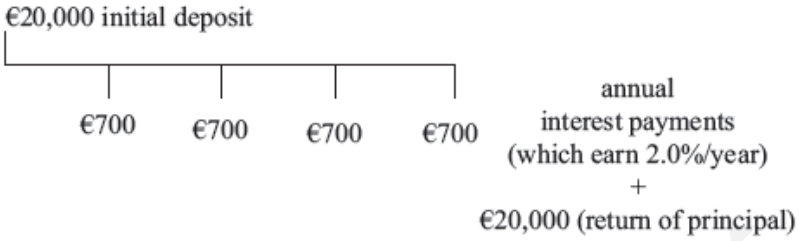
1. Solution: B.

PV of a 10-year annuity due is simply the PV of the ordinary annuity multiplied by 1.05:

PV = $15,443.47 × 1.05

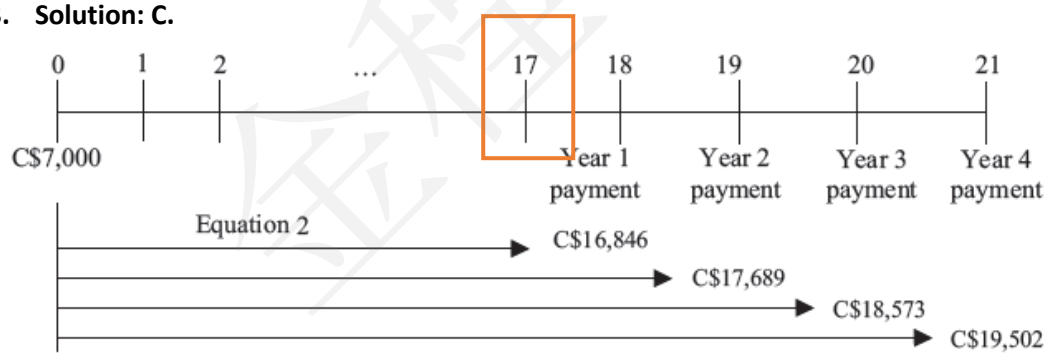
PV = $16,215.64.

2. Solution: B.



€20,000.00	CD
€743.25	First payment's *FV*
€728.54	Second payment's *FV*
€714.13	Third payment's *FV*
€700.00	Fourth payment's *FV*
€22,885.92	Total *FV*

3. Solution: C.



- 7000 元的现值，以 5%增长，计算 18、19、20、21 的学费：

Payment 18=7000*(1+5%)^{18}=16,846 或 N=18，I/Y=5 PV=-7000 PMT=0，CPT（FV）；

Payment 19=7000*(1+5%)^{19}=17,689 或 N=19，I/Y=5 PV=-7000 PMT=0，CPT（FV）；以此类推。

- 计算未来 4 年学费在 17 这个时点的后付年金现值：

16,846(1.06)$^{-1}$ + 17,689(1.06)$^{-2}$ + 18,573(1.06)$^{-3}$ + 19,502(1.06)$^{-4}$= 62,677

- 计算 0-17 年中每年的 PMT，N=17, I/Y=6, PV=0, FV=62,677 CPT(PMT)=2,221.58

4. Solution: A.

First, calculate the holding period return of each quarter:

HPR_1 = (500,000 - 20,000 - 400,000) / (400,000 + 20,000) = 19.05%

HPR_2 = (600,000 - 30,000 - 500,000) / (500,000 + 30,000) = 13.21%

HPR_3 = (700,000 + 40,000 - 600,000) / (600,000 - 40,000) = 25%

HPR_4 = (700,000 - 50,000 - 700,000) / (700,000 + 50,000) = -6.67%

Then, calculate the time-weighted rate of return.

TWRR = (1+19.05%)*(1+13.21%)*(1+25%)*(1-6.67%) – 1 = 57.23%

5. Solution: C.

Calculate and interpret the bank discount yield, holding period yield, effective annual yield, and money market yield for U.S. Treasury bills and other money market instruments.

Convert among holding period yields, money market yields, effective annual yields, and bond equivalent yields.

C is correct. First, calculate the initial price (P_0) of the T-bill:

$r_{BD} = \frac{D}{F} \times \frac{360}{t}$, P_0 = 100 – D (D represent "discount")

$0.0425 = \frac{D}{100} \times \frac{360}{180}$, D = 2.125

P_0 = 100 – 2.125 = 97.875.

Then, calculate the holding period yield (HPY) (recall that T-bills are pure discount instruments and do not pay coupons):

$HPY = (P_t – P_0) \div P_0$

HPY = (100 – 97.875) ÷ 97.875= 0.0217.

Finally, convert the HPY into effective annual yield:

$EAY = (1+ HPY)^{365/t} – 1$

$EAY = (1+ 0.0217)^{365/180} – 1 = 0.0445 = 4.45\%$.