

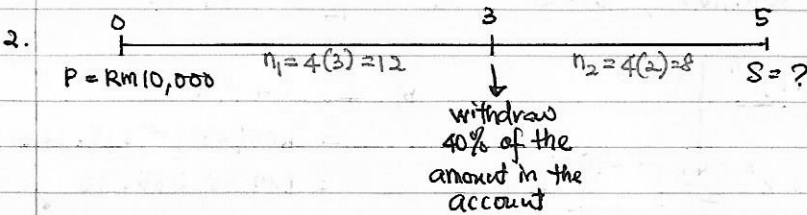
Compound Interest

1.  $S = \text{RM } 5,000$   
 $t = 3$   
 $k = 5.4\%$   
 $m = 4$  (quarterly)  $\left\{ \begin{array}{l} i = \frac{0.054}{4} \\ n = mt = 4(3) = 12 \end{array} \right.$

$$S = P(1+i)^n$$

$$5000 = P\left(1 + \frac{0.054}{4}\right)^{12}$$

$$P = \text{RM } 4,256.82$$



$$i = \frac{0.06}{4}$$

$$m = 4$$
 (quarterly)

$$\textcircled{1} S_1 = P(1+i)^{n_1}$$

$$= 10,000 \left(1 + \frac{0.06}{4}\right)^{12}$$

$$= 11,956.18171$$

$$\Rightarrow 40\% \text{ of } S_1 = 4,782.472686$$

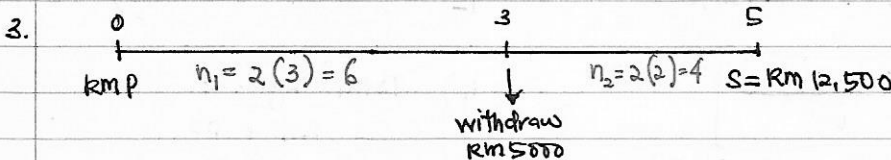
New Balance at Year 3

$$= 7,173.709029$$

$$\textcircled{2} S = P(1+i)^{n_2}$$

$$= 7,173.709029 \left(1 + \frac{0.06}{4}\right)^8$$

$$= \text{RM } 8,081.13$$



$$i = \frac{0.035}{2}$$

$$m = 2$$
 (semi-annually)

$$\textcircled{1} S_1 = P(1+i)^{n_1}$$

$$= P\left(1 + \frac{0.035}{2}\right)^6$$

$$= 1.109702354 P \rightarrow \text{withdraw RM } 5000$$

New Balance in account

$$= 1.109702354 P - 5000$$

$$\textcircled{2} S = P(1+i)^{n_2}$$

$$12,500 = (1.109702354 P - 5000) \left(1 + \frac{0.035}{2}\right)^4$$

$$11,661.98132 = (1.109702354 P - 5000)$$

$$1.109702354 P = 16,661.98132$$

$$P = \text{RM } 15,014.82$$

4.  $P = \text{RM } 2,300$ ,  $S = \text{RM } 4,600$  (Double)

$$i = \frac{0.05}{4}$$

$$m = 4$$
 (quarterly)

$$n = \frac{\log \frac{S}{P}}{\log(1+i)}$$

$$= \frac{\log \frac{4600}{2300}}{\log\left(1 + \frac{0.05}{4}\right)}$$

$$= 55.79763048$$

$$\therefore t = \frac{n}{m}$$

$$= \frac{55.79763048}{4}$$

$$\approx 13.9 \text{ years}$$

5.  $P = RM Y$   
 $i = \frac{0.07}{3}$   
 $m = 3$  (every 4 months)  
 $t = 6$   
 $S = RM 4225$

i)  $S = P(1+i)^n$   
 $4225 = Y(1 + \frac{0.07}{3})^{18}$   
 $Y = RM 2,789.45$

ii)  $I = S - P$   
 $= 4225 - 2789.45$   
 $= RM 1,435.55$

ANNUITY

1.  $DP = RM 25,000$ ,  $R = RM 1,100$ ,  $t = 20$ ,  $i = \frac{0.044}{12}$ ,  $m = 12$

a)  $A = R \left[ \frac{1 - (1+i)^{-n}}{i} \right]$   
 $= 1100 \left[ \frac{1 - (1 + \frac{0.044}{12})^{-240}}{\frac{0.044}{12}} \right]$   
 $= 175,364.6998$

b)  $I = Rn - A$   
 $= 1100(240) - 175,364.6998$   
 $= RM 88,635.30$

$\therefore CP = A + DP$   
 $= RM 200,364.70$

2.  $DP = RM 15,000$ ,  $B = RM 35,000$ ,  $i = \frac{0.1}{12}$ ,  $m = 12$  (monthly),  $t = 9$

a)  $A = R \left[ \frac{1 - (1+i)^{-n}}{i} \right]$   
 $35000 = R \left[ \frac{1 - (1 + \frac{0.1}{12})^{-108}}{\frac{0.1}{12}} \right]$

ii) Total Payment  
 $= Rn + DP$   
 $= 492.75(108) + 15,000$   
 $= RM 68,217.43$

$R = RM 492.75$

3.  $A = RM 45,000$ ,  $t = 5$ ,  $i = \frac{0.07}{12}$ ,  $m = 12$

i)  $A = R \left[ \frac{1 - (1+i)^{-n}}{i} \right]$   
 $45,000 = R \left[ \frac{1 - (1 + \frac{0.07}{12})^{-60}}{\frac{0.07}{12}} \right]$

ii)  $S = R \left[ \frac{(1+i)^n - 1}{i} \right]$   
 $= 891.05 \left[ \frac{(1 + \frac{0.07}{12})^5 - 1}{\frac{0.07}{12}} \right]$

$R = RM 891.05$

$= RM 4507.53$

ii)  $A = R \left[ \frac{1 - (1+i)^{-n}}{i} \right]$   
 $= 891.05 \left[ \frac{1 - (1 + \frac{0.07}{12})^{-60}}{\frac{0.07}{12}} \right]$

$= RM 8631.17$

No: \_\_\_\_\_

4.  $CP = RM\ 80,000$   $i = \frac{0.022}{12}$   $m = 12$   $t = 7$   
 $DP = RM\ 8,000$  (10% of CP)  
 $B = RM\ 72,000$

i)  $A = R \left[ \frac{1 - (1+i)^{-n}}{i} \right]$   
 $72,000 = R \left[ \frac{1 - \left(1 + \frac{0.022}{12}\right)^{-84}}{\frac{0.022}{12}} \right]$

$R = RM\ 925.62$

iii)  $S = R \left[ \frac{(1+i)^n - 1}{i} \right]$   
 $= 925.62 \left[ \frac{\left(1 + \frac{0.022}{12}\right)^4 - 1}{\frac{0.022}{12}} \right]$

$= RM\ 3,712.67$

ii)  $I = Rn - A$   
 $= 925.62(84) - 72000$   
 $= RM\ 5,752.08$

iv)  $A = R \left[ \frac{1 - (1+i)^n}{i} \right]$   
 $= 925.62 \left[ \frac{1 - \left(1 + \frac{0.022}{12}\right)^{-4}}{\frac{0.022}{12}} \right]$

$= RM\ 3685.57$

5.  $A = RM\ 100,000$   $i = \frac{0.04}{12}$   $m = 12$  (monthly)  $n = 60$

i)  $A = R \left[ \frac{1 - (1+i)^{-n}}{i} \right]$   
 $100,000 = R \left[ \frac{1 - \left(1 + \frac{0.04}{12}\right)^{-60}}{\frac{0.04}{12}} \right]$

$R = RM\ 1,841.65$

ii)  $S = R \left[ \frac{(1+i)^n - 1}{i} \right]$   
 $= 1841.65 \left[ \frac{\left(1 + \frac{0.04}{12}\right)^{16} - 1}{\frac{0.04}{12}} \right]$

$= RM\ 30,214.64$