GROUP TUTORIAL

CHAPTER 2: SIMPLE INTEREST (ANSWER SCHEME)

1) Darwish borrowed RM8,400 from Bank Q at 11% simple interest rate per annum on 22 Feb 2011. If he paid the interest RM 231, find the date of repayment using banker's rule. (5 marks)

$I = P\,r\,t$ √

$$231 = 8{,}400 \times 0.11 \times \left(\frac{t}{360}\right)$$ √√√

$$t = \frac{231}{8{,}400(0.11)} \times 360$$ √

t = 90 days √

Feb	28 – 22 = 6	√	
March	31	√	Date of repayment = 23 May 2019 √√
April	30		
May	23		
	90 days		

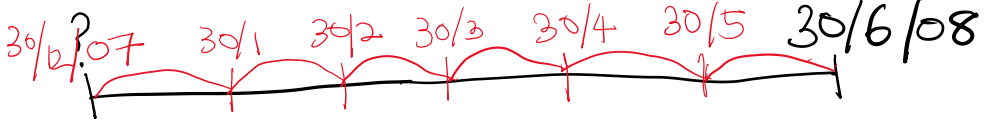
2) Eighteen months ago, a sum of money was invested. Now the investment is worth RM4,480. Find the original principal if the simple interest rate offered was 8% per annum. (3 marks)

$S = P(1+rt)$

$4480 = P(1+0.08(\frac{18}{12}))$ √√√

RM 4000 = P √√

3) **On 30 June 2008, Erin paid RM8,200 for her loan of RM8,000 made on a certain date. If the simple interest rate was 5%, determine the term of the loan and the date of the loan.** **(5 marks)**



$P = RM8000$

$r = 0.05$

$S = RM8200$

$S = P(1+rt)$

$8200 = 8000(1+0.05t)$

$\frac{41}{40} = 1 + 0.05t$

$\frac{1}{40} = 0.05t$

6 months $= \frac{1}{2}$ year $= t$ ✓✓

30/6/08 − 6 months = 30th of December 2007 ✓✓

4) A loan was obtained on 21st July 2010 at 10% simple interest. RM10,100.20 was paid on 30th November 2010 to settle the loan. Find the value of the loan using Banker's Rule. (4 marks)

July	31-21=10
August	31
September	30
Oct	31
Nov	30
Total	132√

√√

$$S = P(1 + rt)$$

$$10{,}100.20 = P(1 + 10\% \times \tfrac{132}{360}) \quad √√√$$

$$P = RM\,9{,}742.96 \quad √√$$

5) Dani saved RM2000 in an account at 9% simple interest for 2 years. A year later, the interest rate was reduced to 8.5%.

i) Find the amount of interest at the end of the first year. (2 marks)

ii) What is the total interest earned at the end of 2 years? (4 marks)

i) $S_1 = P(1 + r_1 t_1)$ √
$= 2000(1 + 9\% \times 1)$ √√√
$= RM\,2{,}180$ √√

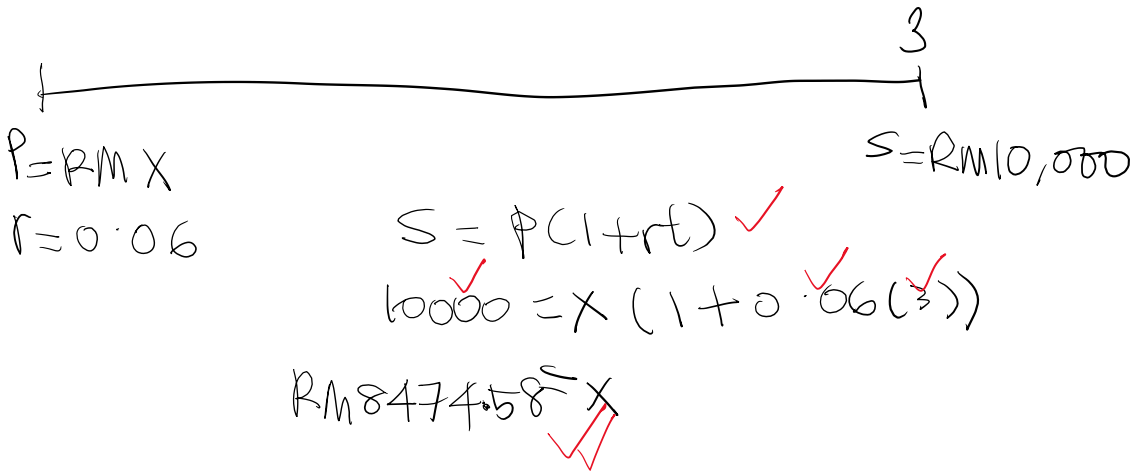
ii) $S_1 = P + I_1$
$2180 = 2000 + I_1$ √√
$I_1 = RM\,180$ √

$I_2 = P \times r_{2\times} t_2$
$= 2000 \times 8.5\% \times 1$ √√
$= RM\,170$ √

Total interest = $I_1 + I_2$
$= 180 + 170$ √
$= RM\,350$ √

6) RM X was invested in a bank 3 years ago at a simple interest rate of 6% per annum. The accumulated amount today is RM10,000.

i) What is the value of X? **(3 marks)**



ii) What is the interest earned? **(2 marks)**

$I = S - P$

$= 10,000 - 8474.58$

$= RM1525.42$

7) A loan of RM1,000 on 12th February 2010 became RM1,200 on 25th May 2010. Find the:

i) exact time of the investment (2 marks)

12/2/10 ——— 25/5/10

P = RM1000 S = RM1200

12 – 28 Feb 16 days ✓
1 – 31 March 31 ✓
1 – 30 April 30 ✓
1 – 25 May 25 ✓

102 days ✓

ii) interest rate being charged using Banker's Rule (3 marks)

$I = Prt$

$1200 - 1000 = 1000(r)\left(\frac{102}{360}\right)$

$70.59\% = r$

ii) amount to be paid on 25th May 2010 using exact time and exact interest (3 marks)

$S = P(1 + rt)$

$= 1000\left(1 + 0.7059\left(\frac{102}{365}\right)\right)$

$= RM\ 1197.27$

8) Shiema has saved RM5,000 in an account that offered r% simple interest per annum on 28 May 2012. If the interest on 23 September 2012 was RM49.35, find the value of r using approximate time and exact interest. (5 marks)

28 – 30 May = 2 ✓

June = 30

July = 30 ✓

Aug = 30

1 – 23 Sept = 23 ✓

115 days ✓

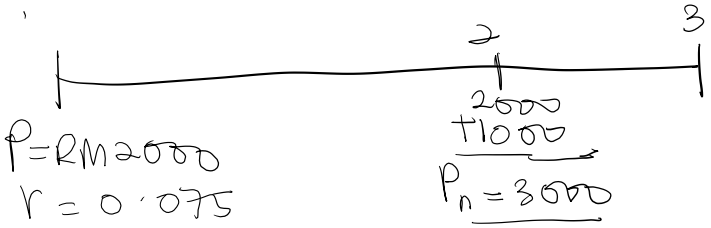
$I = Prt$

$49.35 = 5000r\left(\frac{115}{366}\right)$ ✓✓✓✓

$r = 0.0314 \approx 3.14\%$ ✓✓

9) Remy made a loan of RM2,000 at TRY BANK with 7.5% simple interest for three years. After 2 years, he borrow another RM1,000 from the bank.

i) Calculate the amount of interest charge for the first 2 year after he made the loan. (2 marks)



$I_q = Prt$

$= 2000(0.075)(2)$

$= RM300$

ii) Calculate the amount of interest for the next 1 year after he made an additional loan. (2 marks)

$I_b = Prt$

$= 3000(0.075)(1)$ ✓ ✓ ✓

$= RM\,225$ ✓ #

iii) Find the total amount that he must pay after 3 years. (2 marks)

$S = P + I_a + I_b$

$= 2000 + 300 + 225$ ✓ ✓ ✓

$= RM2525$ ✓ #

10) 65 days ago, yusuff deposited a sum of money in a bank that paid simple interest rate of 4.38% per annum. The balance today on 25 March 2016 was RM6,855.20.

i) Find the date he deposited the money. (2 marks)
ii) Calculate the original amount he deposited in the bank. (3 marks)
iii) How many years from today will the investment amount to RM7,748.90. (3 marks)

i)

20-31	Jan	11✓
1-29	Feb	29
1-25	March	25✓
		65 days

Therefore, the date he deposited is 20 January 2016. ✓✓

ii)

$$S = P(1+rt)$$

$$6{,}855.20 = P\left[1+(0.0438)\left(\frac{65}{360}\right)\right] \checkmark\checkmark\checkmark\checkmark$$

$$P = RM6{,}801.41 \checkmark\checkmark$$

iii)

$$S = P(1+rt)$$

$$7{,}748.90 = 6{,}801.41(1+0.0438t) \checkmark\checkmark\checkmark$$

$$t = 3.181 \text{ years} \checkmark$$

$$\text{Therefore t from today } = 3.181 - \frac{65}{360} = 3 \text{ years} \checkmark\checkmark$$

11) Fatimah saved RM10,000 on 15 February 2018 in an account that offer r% simple interest per year. If the exact simple interest earned on 8 Jun 2018 was RM92, find the

i) exact time of the investment. (2 marks)
ii) interest rate, r% being charged using Banker's Rule. (2 marks)
iii) amount to be paid on 8 Jun 2018 using ordinary time and exact interest. (4 marks)

i)

15-28	Feb	13✓
1-31	March	31
1-30	April	30
1-31	May	31
1-8	Jun	8✓
		113 days

Therefore the exact time of the investment is **113 days**. ✓✓

ii)

$$I = Prt$$

$$92 = 10{,}000(r)\left(\frac{113}{360}\right) \checkmark\checkmark\checkmark$$

$$r = 2.93\% \checkmark$$

iii)

15-30	Feb	15
1-30	March	30
1-30	April	30
1-30	May	30
1-8	Jun	8
		113 days✓✓

$$S = P(1+rt)$$

$$= 10{,}000\left[1+(0.0293)\left(\frac{113}{365}\right)\right] \checkmark\checkmark\checkmark\checkmark$$

$$= \text{RM}10{,}090.71 \checkmark\checkmark$$

12) Mrs.Kamala deposited RM5,600 in a bank and obtained a simple interest of RM900 after 4 years. Find

i) the accumulated amount at the end of 4 years? (2 marks)

$$S = P + I \checkmark$$

$$S = 5600 + 900 \checkmark\checkmark$$

$$S = \text{RM}6500 \checkmark$$

ii) the simple interest rate offered by the bank? (3 marks)

$$S = P(1+rt) \checkmark$$

$$6500 = 5600(1+r(4)) \checkmark\checkmark\checkmark$$

$$r = 4.02\% \checkmark\checkmark$$

iii) the number of years if Mrs. Kamala wanted the amount in her account to become RM7,851.20 starting from today. (3 marks)

$$S = P(1+rt)$$

$$7851.20 = 5600(1+0.0402t) \checkmark\checkmark\checkmark$$

$$t = 10 \checkmark$$

$$10 - 4 = 6 \text{ years} \checkmark\checkmark$$

13) Rokiah borrowed RM X on 25 August 2012 from Bank F that charged a simple interest of 5.6% per annum. Rokiah had to pay RM10,047.51 on 27 October 2012. Find

i) the exact time of the investment (2 marks)

25 August 2012 - 31 August 2012= 6 days✓

September 2012 = 30 days✓

1 October 2012 - 27 October 2012 = 27 days✓

Total = 63 days✓

ii) the value of X using Banker's Rule (3 marks)

$$S = P(1+rt)\checkmark$$

$$10047.51 = X\left[1+0.056\left(\frac{63}{360}\right)\right]\checkmark\checkmark\checkmark\checkmark$$

$$X = RM9950\checkmark$$

iii)the accumulated amount on 27 October 2012 using exact time and exact interest (3 marks)

$$S = P(1+rt)$$

$$S = 9950\left[1+0.056\left(\frac{36}{366}\right)\right]\checkmark\checkmark\checkmark\checkmark$$

$$S = RM10045.91\checkmark\checkmark$$