



# Savings & Investment

Mathematics

# Savings & Investment

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Simple interest Calculation

$$I = Prt$$

I = Interest , P= Principal , t = duration

I = Faedah , P= Principal , t = masa

Compound Interest

$$MV = P\left(1 + \frac{r}{n}\right)^{nt}$$

P= Principal

Principal, r= annual interest , n = number of time interest is compounded in a year, t = number of years

P= Principal , r= faedah tahunan , n = bilangan kali faedah dikompaun setahun, t = bilangan tahun



Question

Given the information below, find the total saving using . **Berdasarkan maklumat dibawah, cari hasil simpanan menggunakan kaedah**

- a) Simple Interest/ **Faedah Mudah**
- b) Compound Interest Yearly / **Faedah Kompoun setiap tahun**
- c) Compound Interest Quarterly / **Faedah Kompoun setiap suku tahun**

Question/ Soalan	Principle/ Principal	Yearly Interest/ Faedah Tahunan	Duration/ Tempoh
1	RM 10 000	3%	5 years

Solution 1 (Simple Interest/Faedah Ringkas)	(Compound Interest/ Faedah Kompoun)
<p>P = RM 10 000 t= 5 years r = 3%</p> <p>Interest/ Faedah</p> $I = Prt$ $I = 10000 \times \frac{3}{100} \times 5$ $I = 1500$ <p>Total = RM 10 000 + RM 1500 = RM11500</p>	<p>P = RM 10 000 t= 5 years r = 3%</p> <p>Compound Interest /Faedah kompoun</p> $MV = P \left(1 + \frac{r}{n}\right)^{nt}$ $MV = 10000 \left(1 + \frac{5}{100}\right)^5$ $MV = 11 592.74$ <p>Total = RM 11592.74</p>

Question 2

Given the information below, find the total saving using . **Berdasarkan maklumat dibawah, cari hasil simpanan menggunakan kaedah**

- a) Simple Interest/ **Faedah Mudah**
- b) Compound Interest Yearly / **Faedah Kompoun setiap tahun**
- c) Compound Interest Quarterly / **Faedah Kompoun setiap setengah tahun**

Question/ Soalan	Principle/ Principal	Yearly Interest/ Faedah Tahunan	Duration/ Tempoh
2	RM 15 000	3%	5 years

Solution 2 (Simple Interest/Faedah Ringkas)	(Compound Interest/ Faedah Kompoun)
$Total = RM\ 1750$	b) $MV = RM17389.11$ c) $MV = RM17417.76$

Question 3

Given the information below, find the total saving using . Berdasarkan maklumat dibawah, cari hasil simpanan menggunakan kaedah

- a) Simple Interest/ Faedah Mudah
- b) Compound Interest / Faedah Kompoun

Question/ Soalan	Principle/ Principal	Yearly Interest/ Faedah Tahunan	Duration/ Tempoh
3	RM 5 000	4%	7 years

Solution 3 (Simple Interest/Faedah Ringkas)	(Compound Interest/ Faedah Kompoun)
$Total = RM\ 6400$	b) $MV = RM6579.70$ c) $MV = RM6597.39$



# INVESTMENT

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Formula 1

$$\text{Total Investment (Jumlah Pelaburan)} = \text{Cost price (kos seunit)} \times \text{number of shares (bil syer)}$$

Formula 2

$$\text{Average Cost (Kos Purata)} = \frac{\text{Total Investment (Jumlah Pelaburan)}}{\text{Total Share (Bilangan Syer)}}$$

Question 1

This is the share information of Megasteel Bhd . **Jadual menunjukkan harga syer bagi syarikat Megasteel**

Months/ Bulan	Jan	Feb	March	April	May	June
Price per share / Harga Seunit	RM 1.00	RM 1.20	RM 0.95	RM 1.05	RM 1.30	RM 1.50

James invest RM 4000 monthly into the company by purchasing share. **James melabur RM 4000 sebulan dengan membeli syer syarikat**

Find

- Total Investment from Jan to June/ **Jumlah pelaburan dari Jan ke Jun**
- Total Share purchase/ **Jumlah syer yang dibeli**
- Average Cost of the share /**Kos purata syer**
- If James sold all the share in the 1<sup>st</sup> July for the price of RM 1.45. How much can he profit.  
**Jika James kesemua syer pada 1 July pada harga RM 1.45. Berapakah keuntungannya**

Solution

a)  $RM\ 4000 \times 6 = RM\ 24\ 000$



b)

Months/ Bulan	Jan	Feb	March	April	May	June
Price per share / Harga Seunit	RM 1.00	RM 1.20	RM 0.95	RM 1.05	RM 1.30	RM 1.50
Number of share $\frac{\text{Monthly Invest}}{\text{Share Price}}$	4000 Units	3333 Units	4211 Units	3810 Units	3077 Units	2667 Units

Total Units : 4000 + 3333 + 4211 + 3810 + 3077 + 2667 = 21098 units

c)

$$\begin{aligned} \text{Average Cost (Kos Purata)} &= \frac{\text{Total Investment (Jumlah Pelburan)}}{\text{Total Share (Bilangan Syer)}} \\ &= \frac{\text{RM 24 000}}{21098} = \text{RM 1.14} \end{aligned}$$

d) When he sold all the share for RM 1.45. His profits are

$$\text{RM 1.45} - \text{RM 1.14} = \text{RM 0.31 per unit}$$

$$\text{RM 0.31} \times 21098 = \text{RM 6540.38}$$

Question 2

This is the share information of Polysteel Bhd . Jadual menunjukkan harga syer bagi syarikat Polysteel

Months/ Bulan	Jan	Feb	March	April	May	June
Price per share / Harga Seunit	RM 3.00	RM 4.20	RM 1.95	RM 1.55	RM 2.30	RM 3.50

James invest RM 40000 monthly by purchasing share. James melabur RM 40000 sebulan dengan membeli syer syarikat

Find

- Total Investment from Jan to June/ Jumlah pelaburan dari Jan ke Jun
- Total Share purchase/ Jumlah syer yang dibeli
- Average Cost of the share / Kos purata syer



- d) If James sold all the shares in the 1<sup>st</sup> July for the price of RM 3.01. How much can he profit.  
 Jika James kesemua syer pada 1 July pada harga RM 3.01. Berapakah keuntungannya

Please provide your answers here. Please include a table

- a) Total Investment from Jan to June RM 240 000
- b) Total Share purchase =88472
- c) Average Cost of the share = RM2.71
- d) Profit =**RM 26 541.60**

### Question 3

This is the share information of Polysteel Bhd . Jadual menunjukkan harga syer bagi syarikat Megasteel

Months/ Bulan	Jan	Feb	March	April	May	June
Price per share / Harga Seunit	RM 1.00	RM 1.20	RM 1.15	RM 1.05	RM 1.02	RM 1.04

James invest RM 2000 monthly the company buy purchasing share. James melabur RM 2000 sebulan dengan membeli syer syarikat





Find

- a) Total Investment from Jan to June/ **Jumlah pelaburan dari Jan ke Jun**
- b) Total Shares purchase/ **Jumlah syer yang dibeli**
- c) Average Cost of the share /**Kos purata syer**
- d) If James sold all the shares in the 1<sup>st</sup> July for the price of RM 1.21. How much can he profit.  
**Jika James kesemua syer pada 1 July pada harga RM 3.01. Berapakah keuntungannya**

Please provide your answers here. Please include a table

- a) Total Investment from Jan to June RM 12000
- b) Total Shares purchase = 9272
- c) Average Cost of the share= RM 1.29

Profit= RM 741.76



# Housing Investment / Business Investment

$$\text{Return of Investment(ROI)} = \frac{\text{Total Return}}{\text{Initial Cost Price}} \times 100\%$$

$$\text{Nilai Pulangan Modal(ROI)} = \frac{\text{Jumlah Pulangan}}{\text{Harga Kos}} \times 100\%$$

## Question 1

James bought a house at the price of RM 100 000. He paid 10% as down payment and secure a loan of RM 90 000. He sold the house for RM 160 000 after 4 years. In the last 4 years he rented the house for RM 300/monthly. The cost of repair before selling the house is RM 10 000 before she managed to sell it. The loan amount still owed to the bank was RM 30 000. Meanwhile the amount that has been amortized to the bank was RM 10 000. (All legal and processing fees are FREE)

James membeli sebuah rumah dengan harga RM 100 000. Dia menjelaskan 10% sebagai wang pendahuluan. James menjual rumahnya selepas 4 tahun dengan harga RM 160 000. Pada 4 tahun yang pertama dia menyewa rumahnya dengan harga RM 300 sebulan. Sebelum menjual rumahnya James membelanjakan RM 10 000 untuk memperbaiki peralatan rumahnya. Pinjaman yang telah dilunaskan ialah RM 90 000. (Segala kos peguam dan kos pemprosesan PERCUMA)

Find

- Initial Down payment / Wang Pendahuluan
- Capital Gain / Keuntungan Modal
- Rental Collected / Sewa
- Total Return / Jumlah Pulangan
- Find the ROI / Pulangan Pelaburan

Solution

a) Initial Investment = RM 100 000

b) Capital Gain = RM 160 000 – RM 90 000 – RM 10 000 - RM 10 000 = RM 50 000

c) Rental collected = RM 300 x 12 x 4 = RM 14 400

d) Total Return = RM 50 000 + RM 14 400 = RM 64 400

e)

$$\text{Return of Investment(ROI)} = \frac{\text{RM 64400}}{\text{RM 100 000}} \times 100\% = 64.4\%$$

### Stamp duty

Tax imposed on documents or letters with legal, commercial or financial implications under the First Schedule, of Stamp Act 1949.

### Legal cost

Payment to lawyer to perform the transfer of property for the buyer.

### Commission

Fee paid by the property seller to the agent for the sale of real estate.



## Question 2

James bought a house at the price of RM 400 000. He paid 50% as down payment. She renovated the kitchen for RM 100 000. She sold the house for RM 1 550 000 after 5 years. In the last 5 years he rented the house for RM 600/monthly. The cost of repair before selling the house is RM 300 000 before she managed to sell it. Amortisation cost to the bank was RM 300, 000. Lawyer fees is RM 20 000, Stamp Fees is RM 30 000 and commission to the seller is RM 50 000.

James membeli sebuah rumah dengan harga RM 400 000. Dia membayar 50% sebagai bayaran pendahuluan. Dia telah merenovasi dapur dengan harga RM 100 000. Selepas 5 tahun dia menjual rumah itu untuk RM1 550 000 dan melangsaikan hutangnya sejumlah RM 200 000. Dalam tempoh 5 tahun yang lalu, beliau menyewa rumah itu dengan harga RM 600 sebulan. Kos pembaikan sebelum menjual rumah ialah RM 300,000. Kos pelunasan kepada bank ialah RM 300, 000. Yuran peguam ialah RM 20 000, Yuran Setem is RM 30 000 dan komisen kepada penjual ialah RM 50 000.

Find

- Initial down payment/ Wang Pendahuluan
- Capital Gain / Keuntungan Modal
- Rental Collected / Sewa
- Total Return / Jumlah Pulangan
- Find the ROI / Pulangan Pelaburan

Solution here

a) Initial Investment RM 200 000

b) Capital Gain = RM 650 000

c) Rental collected = RM 36 000

d) *Total Return* = RM 686 000

e) *Return of Investment (ROI)* = 171.5%



# Credit Card / Credit Terms

There are 3 portions here

- a) Amount you paid / **Jumlah Perlu bayar**
- b) Interest on Credit Card/ **Charge tambahan**
- c) Late payment charges / **Kadar Bunga lewat bayaran**

**Finance Charge:**

Only applied for outstanding payment

**Minimum Payment:**

Minimum payment to avoid late payment/ financial charge

## Question

Jan 4th

James would like to buy an Ipad with RM 2000. He is late in his payment by 58 days. He only buy the Ipad in the month of January. The bank charge him finance charge of 18% annually. Late payment charge is at minimum RM 10 or 1% of the outstanding balance. (Assume he did not make any credit card use in February)

*James ingin membeli Ipad dengan RM 2000. Dia terlambat dalam pembayarannya sebanyak 58 hari. Dia hanya membeli Ipad pada bulan Januari. Bank mengenakan caj kewangan sebanyak 18% setiap tahun. Caj lewat bayaran ialah minimum RM 10 atau 1% dari baki tertunggak. (Anggapkan dia tidak membuat sebarang penggunaan kad kredit pada bulan Februari)*

Find

- a) What is the minimum payment he should pay to avoid late payment . **Berapakah bayaran minimum yang sepatutnya dibayar untuk mengelakkan bayaran lambat**
- b) The outstanding amount in the credit card statement for the month of February ? **Jumlah yang perlu dibayar bagi penyata kad kredit bagi bulan February?**

Solution:

- a) Minimum Payment =  $\frac{5}{100} \times 2000 = RM 100$
- b) Credit Card Late Payment 18% per year

$$\text{Monthly} = \frac{18\%}{365} = 0.049\% \text{ daily}$$

$$\text{Finance Charge} = 58 \text{ days} \times \frac{0.049}{100} \times RM 2000 = RM 56.84$$

$$\text{Late Payment Charge} = 1\% \times 2000 = RM 20$$

$$\text{February statement} = RM 56.84 + RM 20 + 2000 = RM 2076.86$$



## Question

James received credit card statement in April with outstanding RM 2000. He is late in his payment by 25 days. The bank charge him finance charge of 18% annually. Late payment charge is at minimum RM 10 or 1% of the outstanding balance. (Assume he did not make any credit card use in month of May)

*James menerima kredit kad kredit pada April dengan bayaran tertunggak RM 2000. Dia terlambat dalam pembayarannya sebanyak 25 hari. Bank mengenakan caj kewangan sejumlah 18% setiap tahun. Bayaran caj lewat adalah minimum RM 10 atau 1% daripada baki tertunggak. (Anggapkan dia tidak menggunakan sebarang kad kredit pada bulan Mei)*

Find

The outstanding amount in the credit card statement for the month of May? **Jumlah yang perlu dibayar bagi penyata kad kredit bagi bulan May?**

Answer

RM 4046.39



## Question

James received credit card statement in April with outstanding RM 5000. He made a minimum payment RM 1000 in the interest free period . The bank charge him finance charge of 1.5% per month on his transaction for 40 days with additional outstanding 10 days. Late payment charge is at minimum RM 10 or 1% of the outstanding balance. (Assume he did not make any credit card use in month of May)

*James menerima penyata kad kredit pada bulan April dengan jumlah RM 5,000 (baki tertunggak). Beliau membuat pembayaran minimum RM 1000 dalam tempoh bebas faedah. Caj bank dia membiayai caj sebanyak 1.5% sebulan untuk urus niaganya selama 40 hari dengan tambahan 10 hari terkumpul. Caj bayaran lewat adalah minimum RM 10 atau 1% dari baki tertunggak. (Anggapkan dia tidak membuat sebarang penggunaan kad kredit pada bulan Mei)*

Find

The outstanding amount in the credit card statement for the month of May? **Jumlah yang perlu dibayar bagi penyata kad kredit bagi bulan May?**

Answer

RM 4100



# Loan

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Two types of loan.

- a) Simple Interest / **Faedah Sama Rata**
  - a. Personal Loan
  - b. Buying Goods
- b) Reducing Balance Rate/ **Faedah atas baki**
  - a. Housing Loan
  - b. Business Loan

## **Flat Interst : Faedah Sama Rata**

Sometmes is call it simple interest

## **Interest on balance /Faedah atas baki**

Usually the interest will be reduced monthly by deducting from the outstanding balance

$$\text{Simple interest, } A = P + Prt$$

### Question

Jeremy plans to buy a car worth RM 40 000. The bank loan him the money with **flat interest** of 10% yearly for 2 years. **Jeeremy ingin membeli sebuah kereta dengan harga RM 40 000. Bank menawarkan faedah sama rata 10% setahun bagi pinjaman 2 tahun**

Find

- a) Total Interest he has to pay for 2 years . **Jumlah bunga atau faedah bagi 2 tahun**
- b) How much he needs to pay monthly. **Jumlah perlu dibayar setiap bulan**

Answer

a) RM 8000

b) RM 2000/mth

### Question

Ah Cong need a loan worth RM 85 000. He pays 10 % and the balance payment is settle using a bank loan. The bank charges an **flat interest rate** of 15% yearly for 3 years. **Ah Cong memerlukan pinjaman RM 85000. Bank menawarkan faedah sama rata 15% setahun bagi pinjaman 3 tahun.**

Find

- a) Total Interest he has to pay for 3 years . **Jumlah bunga atau faedah bagi 3 tahun**
- b) How much he needs to pay monthly. **Jumlah perlu dibayar setiap bulan**

Answer

$$I = \text{RM } 34\,425$$





## Question

Mandy plans to buy a house worth RM 1 400 000. The bank loan him the money with **interest on balance** of 5% on the balance. The monthly repayment for the loan is RM 5500. The tenure of the loan is 30 years.

Mandy merancang untuk membeli sebuah rumah bernilai RM 1400 000. Bank memberikan pinjaman dengan **kaedah faedah atas baki** sebanyak 5%. Bayaran balik bulanan bagi pinjaman ialah RM 5500. Jangka hayat pinjaman ialah 30 tahun

Find

How much he needs to pay for first 2 months. **Jumlah perlu dibayar bagi dua bulan pertama**

Answer

**Total for first 2 months = RM 5833.33+ RM 5857.64= RM 11 690,97**



## Question

Jeremy plans to buy a house worth RM 1 800 000. The bank loan him the money with **interest on balance** of 6% on the balance. The monthly repayment for the loan is RM 10 000. The tenure of the loan is 28 years.

Mandy merancang untuk membeli sebuah rumah bernilai RM 1800 000. Bank memberikan pinjaman dengan **kaedah faedah atas baki** sebanyak 6%. Bayaran balik bulanan bagi pinjaman ialah RM 10 000. Jangka hayat pinjaman ialah 30 tahun

Find

How much he needs to pay for first 2 months. **Jumlah perlu dibayar bagi dua bulan pertama**

Answer

Total for first 2 months = RM 9000 + RM 8512.50 = **17 512.50**

