

1. Takaya invested 1000 JPY at 6.3% simple interest for 15 years. Morimi invested 900 JPY at 6.3% interest compounded annually for 15 years. Who had more money at the end of the 15th year? Justify your answer **clearly**.
(Total 5 marks)

2. Two brothers Adam and Ben each inherit \$6500. Adam invests his money in a bond that pays simple interest at a rate of 5% per annum. Ben invests his money in a bank that pays compound interest at a rate of 4.5% per annum.
- (a) Calculate the value of **Adam's** investment at the end of 6 years. (3)
- (b) Calculate the value of **Ben's** investment at the end of 6 years. Give your answer **correct to 2 decimal places**. (3)
- (Total 6 marks)

3. Hassan invested 10 000 CHF at the end of 1971. The interest rate was 5% per annum. How much interest **in total** would Hassan have earned at the end of the year 1999 if
- (a) he had removed the interest from his account at the end of each year;
- (b) he had not removed the interest from his account at the end of each year.
- (Total 4 marks)

4. Bob invests 3000 USD in a bank that offers simple interest at a rate of 4% per annum.
- (a) Calculate the number of years that it takes for Bob's money to double. (3)

Charles invests 3000 USD in a bank that offers compound interest at a rate of 3.5% per annum, compounded half-yearly.

- (b) Calculate the number of years that it takes for Charles's money to double. (3)
- (Total 6 marks)

5. Astrid invests 1200 euros for five years at a nominal annual interest rate of 7.2 %, **compounded monthly**.

- (a) Find the interest Astrid has earned during the five years of her investment.
Give your answer correct to two decimal places.

(3)

Helen invests 1200 euros in an annual **simple interest** scheme for five years.
She earns **the same** interest as Astrid.

- (b) Find the simple interest rate of this scheme.

(3)

(Total 6 marks)

6. Kurt wants to invest 2000 Euros in a savings account for his new grandson.

- (a) Calculate the value of Kurt's investment based on a **simple interest rate** of 4% *per annum*, after 18 years.

Inge tells Kurt about a better account which offers interest at a rate of 3.6% *per annum*, **compounding monthly**.

- (b) Giving your answer to the nearest Euro, calculate the value of Kurt's investment after 18 years if he follows Inge's advice.

(Total 8 marks)

7. Andrew invests 20 000 Swiss francs in a bank that offers a 2% simple interest per year for 8 years.

- (a) Find the interest he has after these 8 years.

Philip invests 20 000 Swiss francs for 6 years in a bank at a nominal rate of 5% interest **compounded quarterly**.

- (b) Find the **total amount** in Philip's account after these 6 years.

(Total 6 marks)

8. Daniel wants to invest \$25 000 for a total of three years. There are three investment options.

Option One pays simple interest at an annual rate of interest of 6 %.

Option Two pays compound interest at a nominal annual rate of interest of 5 %, compounded **annually**.

Option Three pays compound interest at a nominal annual rate of interest of 4.8 %, compounded **monthly**.

(a) Calculate the value of his investment at the end of the third year for each investment option, **correct to two decimal places**.

(8)

(b) Determine Daniel's best investment option.

(1)

(Total 9 marks)

9. Daniel invests \$1000 in an account that offers a nominal annual interest rate of 3.5 % **compounded half yearly**.

(a) Show that after three years Daniel will have \$1109.70 in his account, correct to two decimal places.

(3)

(b) Write down the interest Daniel receives after three years.

(1)

Helen invests \$1000 in an account that offers annual **simple interest**.

(c) Find the annual simple interest rate that would give Helen \$1109.70 after three years.

(3)

(Total 7 marks)

10. On Vera's 18th birthday she was given an allowance from her parents. She was given the following choices.

Choice A \$100 every month of the year.

Choice B A fixed amount of \$1100 at the beginning of the year, to be invested at an interest rate of 12% per annum, compounded monthly.

Choice C \$75 the first month and an increase of \$5 every month thereafter.

Choice D \$80 the first month and an increase of 5% every month.

(a) Assuming that Vera does not spend any of her allowance during the year, calculate, for each of the choices, how much money she would have at the end of the year.

(8)

(b) Which of the choices do you think that Vera should choose? Give a reason for your answer.

(2)

(c) On her 19th birthday Vera invests \$1200 in a bank that pays interest at $r\%$ per annum compounded annually. Vera would like to buy a scooter costing \$1452 on her 21st birthday. What rate will the bank have to offer her to enable her to buy the scooter?

(4)

(Total 14 marks)