

Topic Test: Credit and Borrowing

Remember: these are HSC-type questions.

Time allowed: 40 minutes

Total marks: 25

Part A

(Suggested time: 15 minutes)

Choose the correct answer (A, B, C or D)

for each question.

One mark each

- 1 Find the amount of simple interest earned if \$8000 is invested at 9% per year for eighteen months.

A \$1080 B \$1104
C \$1296 D \$4960

- 2 Will paid \$152.50 per month over four years to repay a loan of \$6000. What annual rate of simple interest was charged?

A 2.5% B 5.5%
C 11% D 22%

- 3 Freya has a credit card with up to 50 days interest free and an interest rate of 0.056% per day. How much interest will Freya pay if she has an amount of \$4200 overdue for 30 days?

A \$0 B \$70.56
C \$71.14 D \$78.40

- 4 An amount of \$70 000 is borrowed. The reducible-interest rate is 1% per month and monthly repayments are \$1004.30. How much interest will be paid in the second month?

A \$700 B \$689.96
C \$696.96 D \$679.91

- 5 An amount of \$15 000 is borrowed. The monthly repayments are \$16.35 per \$1000 borrowed and the term of the loan is twelve years. Find the total amount of interest paid.

A \$2354.40 B \$14 430
C \$20 316 D \$23 025

- 6 Christine wants to borrow \$30 000 over ten years. She is considering two loans:

Loan I: repayments of \$370.35 per month

Loan II: flat rate of interest of 5% p.a.

With which loan will Christine pay the most interest?

- A Loan I
B Loan II
C both loans have the same interest
D there is not enough information to determine which loan charges the most interest

- 7 Meg is considering borrowing \$80 000. Her bank has supplied the following table of monthly repayments for different terms.

Monthly repayments on \$80 000			
Term of loan (years)			
10	12	15	20
\$1039.57	\$937.67	\$840.21	\$750.94

How much extra will Meg pay in total if she takes the loan over fifteen years rather than over ten years?

- A \$23 923.20 B \$35 884.80
C \$26 489.40 D \$11 961.60

- 8 Adam is borrowing \$18 000 to buy a car. The loan has a flat rate of interest of 6.6% p.a. and there is a \$750 establishment fee and account keeping fees of \$10 per month. What is the total amount that Adam will repay including all fees if the loan is over five years?

- A \$24 700 B \$24 810
C \$24 740 D \$25 290

- 9 Yasmin is borrowing some money to buy a motorbike priced at \$8500. She pays 15% deposit and agrees to repay the balance in equal monthly instalments over three years. The flat rate of interest charged is 6% p.a. Find the amount of each instalment.

- A \$236.82 B \$243.19
C \$272.24 D \$320.40

- 10 The following table was drawn up to show the principal and interest over the first three months of a loan.

Principal	Interest	P + I	P + I - R
\$60 000.00	\$480.00	\$60 480.00	\$59 217.00
\$59 217.00	\$473.74	\$59 690.74	\$58 427.74
\$58 427.74	\$467.42	\$58 895.16	\$57 632.16

What is the monthly rate of reducible interest?

- A 0.008% B 0.08%
C 0.8% D 8%

Part B

(Suggested time: 25 minutes)

Show all working.

15 marks

11 Penny borrows \$8400 for a holiday. She agrees to repay the loan over four years with equal monthly payments of \$225.40.

- How much does Penny repay in total? 1 mark
- How much interest does she pay? 1 mark
- What is the annual rate of simple interest charged? 2 marks

12 The following repayment table shows the amounts for the first three months of a loan.

Mth	Principal	Interest	$P+I$	$P+I-R$
1	\$90 000.00	\$675.00	\$90 675.00	\$89 650.77
2	\$89 650.77	\$672.38	\$90 323.15	\$89 298.92
3	\$89 298.92	\$669.74	\$89 968.66	\$88 944.43

- What is the amount of each repayment? 1 mark
- How can we easily tell that the interest charged is a reducible rate and not a flat rate? 1 mark
- Complete the next row of the table. 3 marks

13 Kyle receives the following credit-card statement. His card offers up to 50 days interest free and an interest rate of 16.9725% is charged daily.

Date	Details	Amount	Total
01/06/07	Op. Balance	\$0.00	\$0.00
09/06/07	Insurance	\$936.00	\$936.00
23/06/07	Clothes	\$419.00	\$1355.00
Amount due: \$1355.00			
Due date: 08/07/2007			

- What is the interest rate per day? 1 mark
- How much interest will be charged if the bill is paid by the due date? 1 mark
- Find the amount of interest paid if Kyle pays the bill 15 days late. 2 marks

14 The table shows the monthly payment required per \$1000 borrowed for different terms and interest rates.

Monthly repayments per \$1000				
Term (years)	Interest rate			
	5%	6%	7%	8%
5	\$18.87	\$19.33	\$19.80	\$20.28
10	\$10.61	\$11.10	\$11.61	\$12.13
15	\$7.91	\$8.44	\$8.99	\$9.56

How much interest would be paid on a \$12 000 loan over 10 years at 7% p.a.? 2 marks

Go to p 283 for Quick Answers
or to pp 299–300 for Worked Solutions

Solutions

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1 $P = \$8000$, $r = 0.09$, $n = 1.5$
 $I = Prn$
 $= \$8000 \times 0.09 \times 1.5$
 $= \$1080$ A

2 Total paid = $\$152.50 \times 12 \times 4$
 $= \$7320$
 Total interest = $\$7320 - \6000
 $= \$1320$
 Annual interest = $\$1320 \div 4$
 $= \$330$
 Interest rate = $\frac{330}{6000} \times 100\%$
 $= 5.5\%$ B

3 $P = \$4200$, $r = 0.00056$, $n = 30$
 $A = P(1+r)^n$
 $= \$4200(1.00056)^{30}$
 $= \$4271.14$ (nearest cent)
 $I = \$4271.14 - \4200
 $= \$71.14$ C

[The amount was overdue, which means that it wasn't paid until 30 days after the due date and so interest had to be paid.]

4 1st month: $P = \$70\,000$
 $I = 0.01 \times \$70\,000$
 $= \$700$
 $P + I = \$70\,700$
 $P + I - R = \$70\,700 - \1004.30
 $= \$69\,695.70$
 2nd month: $P = \$69\,695.70$
 $I = 0.01 \times \$69\,695.70$
 $= \$696.96$ (nearest cent) C

5 Repayments = $\$16.35 \times 15$
 $= \$245.25$
 Total repaid = $\$245.25 \times 12 \times 12$
 $= \$35\,316$
 Interest = $\$35\,316 - \$15\,000$
 $= \$20\,316$ C

6 Loan I: Total repaid = $\$370.35 \times 12 \times 10$
 $= \$44\,442$
 Interest = $\$44\,442 - \$30\,000$
 $= \$14\,442$
 Loan II: Interest = $\$30\,000 \times 0.05 \times 10$
 $= \$15\,000$
 Loan II charges more interest. B

7 Over 10 years:
 Total repaid = $\$1039.57 \times 12 \times 10$
 $= \$124\,748.40$
 Over 15 years:
 Total repaid = $\$840.21 \times 12 \times 15$
 $= \$151\,237.80$
 Extra = $\$151\,237.80 - \$124\,748.40$
 $= \$26\,489.40$ C

8 Interest = $\$18\,000 \times 0.066 \times 5$
 $= \$5940$
 Fees = $\$750 + \$10 \times 12 \times 5$
 $= \$1350$
 Total = $\$18\,000 + \$5940 + \$1350$
 $= \$25\,290$ D

9 Deposit = $0.15 \times \$8500$
 $= \$1275$
 Balance = $\$8500 - \1275
 $= \$7225$
 Interest = $\$7225 \times 0.06 \times 3$
 $= \$1300.50$
 Total to repay = $\$7225 + \1300.50
 $= \$8525.50$
 Repayment = $\$8525.50 \div 36$
 $= \$236.82$ (nearest cent) A

10 Interest = $\frac{480}{60\,000} \times 100\%$
 $= 0.8\%$ C

11 a Total repaid = $\$225.40 \times 12 \times 4$
 $= \$10\,819.20$ ✓
 b Interest = $\$10\,819.20 - \8400
 $= \$2419.20$ ✓
 c Interest per year = $\$2419.20 \div 4$
 $= \$604.80$ ✓
 Interest rate = $\frac{604.8}{8400} \times 100\%$
 $= 7.2\%$ ✓

12 a Repayment = $\$90\,675 - \$89\,650.77$
 $= \$1024.23$ ✓
 b The interest is not the same each month. It is reducing. ✓
 c Interest rate = $\frac{675}{90\,000} \times 100\%$
 $= 0.75\%$ ✓
 4th month: $P = \$88\,944.43$
 $I = 0.0075 \times \$88\,944.43$
 $= \$667.08$ (nearest cent) ✓
 $P + I = \$88\,944.43 + \667.08
 $= \$89\,611.51$
 $P + I - R = \$89\,611.51 - \1024.23
 $= \$88\,587.28$ ✓

Month	Principal	Interest	P + I	P + I - R
1	\$90 000.00	\$675.00	\$90 675.00	\$89 650.77
2	\$89 650.77	\$672.38	\$90 323.15	\$89 298.92
3	\$89 298.92	\$669.74	\$89 968.66	\$88 944.43
4	\$88 944.43	\$667.08	\$89 611.51	\$88 587.28

13 a Daily rate = $16.9725\% \div 365$
 $= 0.0465\%$ ✓
 b If the bill is paid by the due date no interest will be charged. ✓
 c $P = \$1355$, $r = 0.000\,465$, $n = 15$
 $A = P(1+r)^n$
 $= \$1355(1.000\,465)^{15}$
 $= \$1364.48$ (nearest cent) ✓
 $I = \$1364.48 - \1355
 $= \$9.48$ ✓

14 Monthly payment = $\$11.61 \times 12$
 $= \$139.32$ ✓
 Total repaid = $\$139.32 \times 12 \times 10$
 $= \$16\,718.40$
 Interest = $\$16\,718.40 - \$12\,000$
 $= \$4718.40$ ✓