

# Yr 12 - Credit and Borrowing

Name: \_\_\_\_\_

Complete your answers in the spaces provided.  
**SHOW ALL YOUR WORKING OUT.**

## Question 1

Calculate the interest on a flat rate loan of \$4000 at a rate of 9%pa. for 6 years.

## Question 2

Calculate the interest on a flat rate loan of \$3200 at a rate of 7.5%pa. for 6 months.

## Question 3

Andrew borrows \$2500 over 3 years to buy a new drum kit. He repays a total of \$3700. Find the rate of interest.

## Question 4

Dominic borrows \$2200 to buy a new guitar. The simple interest rate is 9.75%pa and she takes the loan over 2 years.

- A) Find the interest on the loan
- B) Find the total to be repaid
- C) Find Dominic's monthly repayments.

| A  | B                                    | C               | D           | E            | F            | G            | H            |
|----|--------------------------------------|-----------------|-------------|--------------|--------------|--------------|--------------|
| 1  | Home loan table – monthly repayments |                 |             |              |              |              |              |
| 2  | Annual interest rate:                | 8.50%           |             |              |              |              |              |
| 3  | Years                                | Amount borrowed |             |              |              |              |              |
| 4  | \$80 000                             | \$100 000       | \$120 000   | \$140 000    | \$160 000    | \$180 000    | \$200 000    |
| 5  | 1                                    | -\$6 977.58     | -\$8 721.98 | -\$10 466.37 | -\$12 210.77 | -\$13 955.17 | -\$15 699.56 |
| 6  | 5                                    | -\$1 641.32     | -\$2 051.65 | -\$2 461.98  | -\$2 872.31  | -\$3 282.65  | -\$3 692.98  |
| 7  | 10                                   | -\$991.89       | -\$1 239.86 | -\$1 487.83  | -\$1 735.80  | -\$1 983.77  | -\$2 231.74  |
| 8  | 15                                   | -\$787.79       | -\$984.74   | -\$1 181.69  | -\$1 378.64  | -\$1 575.58  | -\$1 772.53  |
| 9  | 20                                   | -\$694.26       | -\$867.82   | -\$1 041.39  | -\$1 214.95  | -\$1 388.52  | -\$1 562.08  |
| 10 | 25                                   | -\$644.18       | -\$805.23   | -\$966.27    | -\$1 127.32  | -\$1 288.36  | -\$1 449.41  |
| 11 | 30                                   | -\$615.13       | -\$768.91   | -\$922.70    | -\$1 076.48  | -\$1 230.26  | -\$1 384.04  |

**Question 5**

Use the table above to find the monthly repayment required for a loan of \$160 000 taken over 20 years.

**Question 6**

A home loan of \$80 000 is taken out at an interest rate of 8.4% pa. with a monthly repayment of \$720. Use the table below to calculate the amount owing at the end of 6 months.

| Months (M) | Principal (P) | Interest (I) | P + I | P + I - R |
|------------|---------------|--------------|-------|-----------|
| 1          | 80 000        | 560.00       | 80560 | 79840.00  |
| 2          |               |              |       |           |
| 3          |               |              |       |           |
| 4          |               |              |       |           |
| 5          |               |              |       |           |
| 6          |               |              |       |           |

**Question 7**

This table shows the payments per \$1000 on a monthly reducible loan.

| term in years | 7%      | 7.25%   | 7.5%    | 7.75%   | 8%      | 8.25%   | 8.5%    |
|---------------|---------|---------|---------|---------|---------|---------|---------|
| 5             | 19.8012 | 19.9194 | 20.0379 | 20.1570 | 20.2765 | 20.3963 | 20.5164 |
| 10            | 11.6108 | 11.7401 | 11.8702 | 12.0011 | 12.1328 | 12.2653 | 12.3985 |
| 15            | 8.9883  | 9.1286  | 9.2701  | 9.4128  | 9.5566  | 9.7014  | 9.8474  |
| 20            | 7.7530  | 7.9036  | 8.0559  | 8.2095  | 8.3644  | 8.5207  | 8.6782  |
| 25            | 7.0678  | 7.2281  | 7.3899  | 7.5533  | 7.7182  | 7.8875  | 8.0522  |
| 30            | 6.6530  | 6.8218  | 6.9921  | 7.1641  | 7.3377  | 7.5127  | 7.6891  |

Using the table, find the monthly payment on a loan of \$90 000 over 30 years at 7.75%

Question 8

Calculate the effective interest rate of a loan with a normal rate of 15%/pa compounded monthly.

**\* No need to complete Question #8**

Question 9

Use the formula  $r = \frac{2nR}{n+1}$

where  $n$  is the number of payments  
 $R$  is the flat rate

$r$  is the effective rate

To give an approximation of the effective rate of interest on a \$5000 loan for 3 years with monthly re-payments and interest charged at 10%/pa flat.

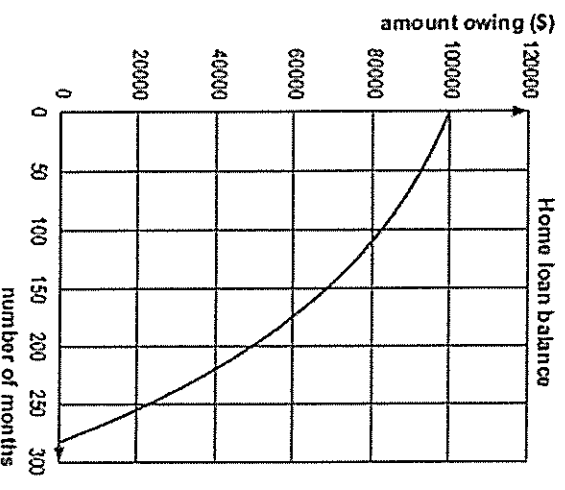
Question 10

Calculate the amount to be paid on a VISA account given a cash advance of \$480 if the total amount is to be repaid over 4 days. This VISA account is charged 15.95%/pa.

Question 11

Use this graph of a home loan at 7.75%/pa with repayments of \$770 to answer these questions.

- A) How much is owing after 100 months
- B) How much is owing after 250 months.
- C) When is the amount owing \$75000
- D) When is the amount owing \$20000
- E) When is the loan half paid?





1) Yr12:GenFinance04.hsc Qn22) MIS00-27d

Michael obtains a personal loan from a bank to buy a computer. The loan is for \$4500. Michael also pays a loan protection fee of \$1.24 per \$100 borrowed. This fee is added to the \$4500.

- Find the total amount borrowed.
- The loan is to be repaid over 3 years, and interest is charged on the total amount borrowed at 8% p.a. flat. Calculate the interest charged.
- Michael repays the loan in equal monthly instalments. What is the amount of each instalment?

2) Yr12:GenFinance04.hsc Qn23) SPC01-13

The table shows monthly repayments for various amounts borrowed, and different annual interest rates, for a term of 20 years.

| Amount borrowed | Monthly repayment |          |          |          |
|-----------------|-------------------|----------|----------|----------|
|                 | 5% pa             | 6% pa    | 7% pa    | 8% pa    |
| \$10 000        | \$66.00           | \$71.64  | \$77.53  | \$83.64  |
| \$15 000        | \$98.99           | \$107.46 | \$116.29 | \$125.47 |
| \$20 000        | \$131.99          | \$143.29 | \$155.06 | \$167.29 |
| \$25 000        | \$164.99          | \$179.11 | \$193.82 | \$209.11 |

The total interest paid over 20 years on a loan of \$15 000 at 6% pa is  
 (A) \$1289.52 (B) \$2149.20 (C) \$10 790.40 (D) \$25 790.40

3) Yr12:GenFinance04.hsc Qn24) SPC01-16

Ali buys a television costing \$1494 on interest-free terms over 2 years. If he pays a one-third deposit, how much will he be required to pay each month?

- (A) \$20.75 (B) \$41.50 (C) \$43.58 (D) \$83.00

4) Yr12:GenFinance04.hsc Qn25) GEN01-4

Frank has a credit card with an interest rate of 0.05% per day and no interest-free period. Frank used the credit card to pay for car repairs costing \$480. He paid the credit card account 16 days later. What is the total amount (including interest) that he paid for the repairs?

- (A) \$480.24 (B) \$483.84 (C) \$504.00 (D) \$864.00

5) Yr12:GenFinance04.hsc Qn26) GEN01-27d

Ted has borrowed \$70 000 at an interest rate of 6.24% per annum compounded monthly. The repayments have been set at \$680 per month. The loan balance sheet shows the interest charged and the balance owing for the first month.

| Month | Principal<br>(at start of month) | Monthly interest                     | Monthly<br>repayment | Balance<br>(at end of month) |
|-------|----------------------------------|--------------------------------------|----------------------|------------------------------|
| 1     | \$70 000                         | $\$70\,000 \times 0.0052$<br>= \$364 | \$680                | \$69 684                     |
| 2     | \$69 684                         | A                                    | \$680                | B                            |

- Explain why 0.0052 is used to calculate the monthly interest.
- Find the missing amounts at A and B.
- Ted would like to calculate the number of months,  $n$ , it will take to repay the loan fully. He uses a 'guess-and-check' method to estimate  $n$  in the following equation:

$$\$680 \times \left\{ \frac{(1.0052)^n - 1}{0.0052} \times (1.0052)^n \right\} = \$70\,000.$$

Here is his working.

Try  $n = 200$ :

$$\$680 \times \left\{ \frac{(1.0052)^{200} - 1}{0.0052 \times (1.0052)^{200}} \right\} = \$84\,424$$

Hence  $n = 200$  is too big.

1. Ted's next guess is  $n = 120$ . Show Ted's working for this guess, including the calculation and the conclusion.
2. State a reasonable value of  $n$  for the next guess.  $\square$

6) Yr12-GenFinance04.hsc Qn27) GEN02-9

The table shows monthly repayments for loans over 30 years.

| Interest rate per annum | Loan amount |           |
|-------------------------|-------------|-----------|
|                         | \$100 000   | \$200 000 |
| 5.0%                    | \$537       | \$806     |
| 5.5%                    | \$568       | \$852     |
| 6.0%                    | \$600       | \$900     |
| 6.5%                    | \$633       | \$949     |
| 7.0%                    | \$666       | \$998     |
| 7.5%                    | \$700       | \$1049    |

James borrows \$200 000 over a period of 30 years at 6.5% per annum. Repayments are to be made monthly according to the table. How much would James repay over 30 years if the interest rate were to remain the same?

(A) \$1265 (B) \$37 950 (C) \$390 000 (D) \$455 400