

# GENERAL MATHEMATICS 3

## WEEK 7 NOTES – TERM 1

### Consumer Credit

At one time or another we have probably borrowed small amounts of money from family or friends. This is the easiest and simplest form of credit. It is informal, the debt is repaid quickly, and the loan usually attracts no credit.

However, it is usual for consumers to borrow larger amounts of money from financial institutions such as banks, building societies and credit unions.

In the exercises below, assume the following:

52 weeks = 1 year

12 months = 1 year

4 weeks = 1 month

26 weeks = 6 months

26 fortnights = 1 year

### Example

A couple wish to lay-by a swing set, valued at \$500, for their children. They agree to pay 10% deposit and weekly payments of \$30. How long will it take to pay off the set?

Deposit = 10% of \$500

$$= 500 \times 10 / 100$$

$$= \$50$$

Amount owing = \$500 - \$50

$$= \$450$$

Number of weeks = \$450 / \$30

$$= 15 \text{ weeks}$$

### Example 2

The couple in the above example could have purchased the swing set by paying a 10% deposit and making weekly repayments of \$20 for a period of 6 months. How much extra do they pay using this method?

Deposit = \$50

Repayments = \$20 per week for 24 weeks (6 months x 4 weeks)

$$= \$480$$

Total paid = \$480 + \$50

$$= \$530 \text{ thus they paid } \$30 \text{ extra.}$$

### Exercise Set 1

Q1. A stereo valued at \$895, is purchased with a deposit of 20% plus monthly repayments of \$70 for 12 months.

- a) How much deposit was paid?
  
- b) What is the total amount of the repayments?
  
- c) How much is actually paid for the stereo?

Q2. John is buying a second hand car with a deposit of \$1000 and monthly repayments of \$395 per month for three years. How much does he actually pay for the car?

Q3. Michelle and Greg wish to borrow \$12000 from a finance company to purchase a caravan. They have approached three different companies and have been given the following quotes.

Company A \$887.35 per month for 18 months

Company B \$710.05 per month for 27 months

Company C \$623.85 per month for 30 months

Calculate the total amount to be repaid to each company.

Q4. Paul signs an agreement to buy a new car costing \$23000 on the road. He has to pay a 15% deposit, an establishment fee of \$175 and a loan protection fee of \$15 p.a. He is also required to comprehensively insure the car for \$500 p.a. He agrees to make repayments of \$825 per month for four years.

- a) Calculate the deposit paid.

b) How much did he borrow from the finance company?

c) How much did he actually pay for the car (include all annual recurrent charges)?

Q5. Jon wants to buy a Harley Davidson costing \$20000. He pays 10% deposit , loan charges of \$400 and on-the-road costs of \$1500. He repays the balance as a loan over three years at \$925 per month. How much did he actually pay for the bike?

Q6. A CD player is valued at \$360. Maria pays a 15% deposit and interest at a rate of 18% p.a. If she pays the balance in six equal monthly instalments, how much is each instalment?

## Credit Cards

Karla has decided that it is time for her to obtain a credit card. A credit card will allow her to purchase goods and services without paying for them on the spot. They can also be used for obtaining cash advances, paying bills and making purchases over the phone or on the Internet. Common credit cards used in Australia include MasterCard, Visa, Bankcard, Diners Club and American Express.

When applying for a MasterCard, Visa or Bankcard, a customer is given a choice of having either an interest-free period (usually up to 55 days) for a small annual fee (around \$22), or no fee payable and no interest-free period (with the interest rate usually being lower for the second option). Each cardholder is offered a certain limit of credit.

A monthly statement showing all transactions for the previous month is issued for every cardholder. Upon receiving a monthly statement, a customer may decide to pay the bank in full by the due date indicated on the statement and hence not have to pay any interest with an interest-free period card. Alternatively, the customer may choose to make the minimum payment only. In this case interest will be charged on the unpaid balance. The minimum payment is usually a certain percentage of the unpaid balance or a certain fixed amount — whichever is larger. Variations in interest rates occur from time to time and cardholders are notified of these changes in advance.

We can compare two credit cards in the advertisements below.

Advertisement	Advertisement
<h3>ANZ Low Rate Credit Card</h3>  <p><ul style="list-style-type: none"><li>✓ 0% p.a. on balance transfers from non-ANZ credit or store cards for the first 16 months (reverts to 13.49% p.a. after 16 months). 2% Balance Transfer Fee applies. Apply by 5 May 2015</li><li>✓ Low ongoing interest rate of 13.49% p.a. on purchases</li><li>✓ Up to 55 interest free days on purchases when you pay your statement of account in full by the due date each month</li><li>✓ Low \$58 Annual Fee</li><li>✓ Terms &amp; conditions, fees &amp; charges apply</li><li>✓ Visit <a href="#">ANZ's website</a> for conditions and full details.</li></ul></p>	<h3>NAB Low Rate Card</h3>  <p><ul style="list-style-type: none"><li>✓ 0% p.a. on balance transfers for 12 months, so you can save on interest when you transfer existing credit card balances to NAB</li><li>✓ Plus, 0% p.a. on purchases for 12 months, so you can also save interest on everyday purchases</li><li>✓ Low ongoing interest rate of 13.99%</li><li>✓ Low annual fee of \$59</li><li>✓ Available on all new NAB Low Rate Cards</li><li>✓ Apply by 19 April 2015. Terms &amp; conditions, fees &amp; charges apply</li><li>✓ Visit <a href="#">NAB's website</a> for conditions and full details.</li></ul></p>

The minimum monthly repayment on your credit card is calculated as follows.

If your closing balance is...	Your monthly payment amount is...
More than \$1,250	2% of the closing balance
\$25–\$1,250	\$25
Less than \$25	The whole amount of your balance

If you are over the credit card limit at the end of the month, then you must pay all the **excess plus the \$25 minimum**.

### Example

Find the minimum payment due for each of the following balances.

- a) \$23.40 As this amount is less than \$25 you pay the full amount.
- b) \$1236.25 As the closing balance is less than \$1250 the minimum payment is \$25
- c) \$1560 As this is over \$1250 you pay 2% of \$1560 ie  $1560 \times 2 / 100 = \$31.20$
- d) \$1560 with a credit card limit of \$1500. This is \$60 over the limit so you pay  $\$60 + \$25 = \$85$ .

### Exercise Set 2

Q1. The XYZ Bank requires the minimum payment off credit card balances to be:

- (a) the closing balance if it is under \$25, or
- (b) the greatest of:
  - (i) the excess of the closing balance over the credit limit, or
  - (ii) 2% of the closing balance (rounded down to the nearest dollar), or
  - (iii) \$25.

Calculate the minimum payments on each of the following balances.

- a) \$17.50
- b) 26.49
- c) \$147.42
  
- d) \$785.00
- e) \$1326.6
- f) \$3489.60
  
- g) \$1954.00 with a limit of \$1500.

## Cash Advance Interest

A 'cash advance' can be useful for emergency access to cash, but it's an expensive option, because the interest rate applied to a cash advance is most often higher than the interest rate applied to purchases. And, unlike purchase interest, there's usually no interest-free period. The interest starts being calculated from the day you make a cash advance. If you don't plan to pay it back quickly, you could pay quite a lot in interest.

So if you use your credit card to withdraw cash from your 'credit' account, either from an ATM or using internet banking, you've just made a cash advance. But how does it work online?

Let's say you want to pay back some money you owe to a friend using internet banking. If you transfer cash from your credit card rather than your everyday banking account to pay, it's normally considered a cash advance.

But using BPAY with your credit card to pay a bill online is **not** usually a cash advance. It's considered the same as making a purchase, so interest will be charged at the purchase interest rate. There are some exceptions where some 'billers' (including some utilities and telco providers) won't accept BPAY payments from credit cards. Depending on your lender, these payments might be rejected or treated as a cash advance. It's a good idea to check with billers if they accept BPAY payments from your credit card so you don't get caught out.

### Example

A cash advance of \$220 is taken out of a credit card on the 5<sup>th</sup> of the month. Calculate the amount of interest paid for a percentage interest rate of 22.00%.

$$\text{Daily \% rate} \quad 22/365 = 0.06027$$

$$\text{Interest per day} \quad 220 \times 0.06027 / 100 = \$0.132594$$

$$\text{Number of days} \quad 30 - 5 = 25 \quad (30^{\text{th}} - 5^{\text{th}})$$

$$\text{Total interest} \quad 25 \times 0.132594 = \$3.31$$

### Exercise Set 3

Q1. Calculate the interest charged on a cash advance of \$430 with a percentage interest rate of 20.5%. The cash advance was taken out on the 9<sup>th</sup> of the month.

**Q2.** A credit card holder used his card on 15 March to obtain a cash advance of \$365, which he repaid on 20 March. What was the amount of interest charged on the cash advance at the rate of 15.01% p.a.?

### 55 day interest free credit cards.

Most credit cards now all offer an interest-free period of “up to 55 days” on purchases. But it doesn’t mean every purchase you make is interest-free for that length of time. It depends on when you make each purchase.

The 55 days begin at the start of your statement period and end when your payment for that purchase is due. In other words, the 55 days is made up of the monthly statement period (approximately 30 days) plus the time give to you to pay your statement balance. That is, 25 days from the last day of the statement period.

So you could get between a fortnight interest-free or a maximum of 55 days.

The most important thing to remember is that you only get the purchases interest-free if you pay your closing balance in full by the due date each month. If you do not a higher interest rate is charged on all the purchases you have made ie it is no longer interest free.

### Example

For a ‘55 days interest free’ credit card, calculate the amount of interest charged on an outstanding balance of \$450 which was repaid 10 days after the due date, given that the first purchase was made on the first day of the 30-day statement period and the annual percentage interest rate was 15%. (Assume that no other purchases were made after the end of the statement.)

#### THINK

- 1 Calculate the length of time for which the interest is charged, keeping in mind that it is charged from the date of the first purchase and until the balance was repaid.
- 2 Calculate the daily interest rate.
- 3 Find the interest charged on \$450 over the period of 65 days and round-off to the nearest cent.

#### WRITE

The number of days from the first purchase to the last day of statement = 30 (as the purchase was made on the first day and the period covers 30 days).

The number of days from the date of the statement to the due date = 25.

The number of days from the due date to the date of actual payment = 10.

Total days = 30 + 25 + 10 = 65

Daily interest rate =  $\frac{15\%}{365}$   
= 0.041 096

Interest = \$450 ×  $\frac{0.041\ 096}{100}$  × 65  
= \$12.02

## Exercise Set 4

Q1. Here is some information extracted from a monthly credit card statement:

Statement begins: 1 April; Statement ends: 30 April; Payment due date: 25 May

Date	Transaction Details	Amount
03 Apr	HBA	180.00
08 Apr	Myer Indooroopilly	89.00
16 Apr	Optus	252.25
22 Apr	Coles Fairfield	112.90
30 Apr	Sportsgirl City	69.95

a) Calculate the interest-free period for each of the above transactions.

b) Complete the following sentence: 'To make full use of the "up to 55 days interest free" option, the purchases should be made at the of the statement period'.

Q2. For a '55 days interest free' credit card, calculate the amount of interest charged on an outstanding balance of \$625 which was repaid a fortnight after the due date, given that the first purchase was made on the first day of the 30-day period and the annual percentage rate was 14.98%. (Assume that no other purchases were made after the end of the statement in question.)

Q3. Study the statement for the '55 days interest-free period' credit card which follows and answer these questions.

a) What is the length of the period of time covered by this statement?

b) What was the closing balance of the previous statement?

c) Did the payment of the previous statement balance incur any interest charges? Explain your answer.

d) Explain how the minimum amount due was calculated.

e) Explain how the amount of available credit was calculated.



MS ILA NORMAN  
32 BROWN STREET  
BUNDABERG Q 4670

STATEMENT BEGINS	8 APRIL 2001
STATEMENT ENDS	5 MAY 2001
PAGE NUMBER	PAGE 1 OF 1
ACCOUNT NUMBER	2345 6789 1234 9299
MINIMUM AMOUNT DUE	\$25.00
PAYMENT DUE DATE	30 MAY 2001
ENQUIRIES (8AM to 8PM, MON-FRI)	13 2221



**VisaCard Statement**

Overdue/Over limit	Opening Balance	New charges	Payments/refunds	Closing Balance
\$0.00	\$22.10	+ \$650.00	- \$22.10	+ \$650.00

Date	Reference Number	Transaction Details	Amount (A) \$
29 Apr	74900052MENTAJ	Payment received - thank you	22.10-
30 Apr	89101123XYZ	Interest charges	2.50
3 May	FIZ3456ROGERDUTY	Government duties - last month	0.32
8 Apr	72345670J4U00ABCD	Travel Wide Melbau	296.18
4 May	12345678GOODILLUV	Books & Musical World Carlton AU	47.00
4 May	789108ABCD1234	SCUD Shoes Noble Park AU	128.00
5 May	7854321XYZWRST	Groovy Music Nth Miboume AU	176.00

SPECIMEN STATEMENT ONLY – USED FOR PURPOSE OF ILLUSTRATION.  
Valid as at 05/01.

Credit limit	\$1000	Annual percentage rate	15.100
Available credit	\$350	Daily percentage rate	.04136

0000142 **Payment record** Cheque number  Date / / Amount \$  CC887 928

**How to pay – please see over**

ACCOUNT NUMBER: **2345 6789 1234 9299**  
MINIMUM AMOUNT DUE: **\$25.00**  
PAYMENT DUE DATE: **30 MAY 2001**  
CARDHOLDER'S NAME: **MS ILA NORMAN**

**When mailing payments ...**

MAIL YOUR PAYMENT TO:  
LOCKED BAG 3402 BRISBANE QLD 9013

PAYMENT DETAILS  
Date paid                      Amount  
/ / \$

Q4. The closing balance for the statement in question 3 was repaid in full on 20 June. Find the amount of interest charged, if no further purchases were made until that date