3

Credit cards

This chapter focuses on the use of credit cards as a method of payment for goods and services.

The main mathematical ideas investigated are:

▶ interpreting credit card statements and performing related calculations

▶ creating a 'ledger of spending'

▶ identifying the various fees and charges associated with credit card usage

▶ expressing a percentage annual interest rate as a daily interest rate in percentage and decimal form

▶ calculating the interest for one billing cycle

▶ comparing the differences between credit cards and debit cards.

FINANCIAL MATHEMATICS
Syllabus references: FM4CEC
Outcomes: MG1H-1, MG1H-2, MG1H-6, MG1H-9

3A Flat-rate loans

Flat-rate loans calculate the interest charges based on a fixed percentage of the original amount borrowed, the **principal**. This type of calculation of interest is referred to as simple interest. The formula for simple interest is:

$$I = \frac{Prn}{100}$$

where
P = the principal, the amount borrowed
r = the interest rate per time period
n = the number of time periods

WORKED EXAMPLE 1

Calculate the simple interest payable on these loans.
a $5000 at 6.7% p.a. over 4 years
b $2300 at 1.56% per month for 19 months
c $980 at 0.03% per day for 23 days

Solve	Think/Apply
a $\quad I = \dfrac{\$5000 \times 6.7 \times 4}{100} = \$1340$	Substitute the values of P, r and n into the formula: $I = \dfrac{Prn}{100}$
b $\quad I = \dfrac{\$2300 \times 1.56 \times 19}{100} = \$681.72$	
c $\quad I = \dfrac{\$980 \times 0.03 \times 23}{100} = \$6.76$	

EXERCISE 3A

1 Complete the following to calculate the simple interest payable on these loans.
   a $8000 at 6.4% p.a. over 5 years
   $$I = \frac{\$8000 \times \square \times \square}{100} = \$\underline{\quad}$$
   b $2800 at 1.6% per month for 16 months
   $$I = \frac{\$2800 \times \square \times \square}{100} = \$\underline{\quad}$$
   c $15 000 at 0.04% per day for 19 days
   $$I = \frac{\$15\,000 \times \square \times \square}{100} = \$\underline{\quad}$$

2 Calculate the simple interest payable on a loan of:
   a $6000 at 5.8% p.a. over 3 years
   b $3200 at 1.1% per month for 13 months
   c $780 at 0.025% per day for 19 days
   d $9600 at 18% p.a. over 2 years
   e $6700 at 1.15% per month for 15 months
   f $28 000 at 0.03% per day for 17 days

03003_Photo of something to do with
flate loan interest rate borrowings.

Calculate the simple interest on:

a $3000 at 15% p.a. over 17 months

b $1800 at 13% p.a. for 21 days

	Solve	Think	Apply
a	$I = \dfrac{\$3000 \times 15 \times \frac{17}{12}}{100} = \$637.50$ Or $I = \dfrac{\$3000 \times \frac{15}{12} \times 17}{100} = \$637.50$	Use $r = 15\%$ p.a. Convert 17 months to $\frac{17}{12}$ years. Or use $n = 17$. Convert 15% p.a. to $\frac{15}{12}\%$ per month.	Convert r and n to the same time period.
b	$I = \dfrac{\$1800 \times 13 \times \frac{21}{365}}{100} = \$13.46$ Or $I = \dfrac{\$1800 \times \frac{13}{365} \times 21}{100} = \$13.46$	Use $r = 13\%$ p.a. Convert 21 days to $\frac{21}{365}$ years. Or use $n = 21$ days. Convert 13% p.a. to $\frac{13}{365}\%$ per day.	

3 Complete the following to calculate the simple interest payable on these loans.

a $13 800 at 16% p.a. for 13 months: $I = \dfrac{\$13\,800 \times \square \times \frac{13}{\square}}{100} = \$\_\_\_\_$ or $I = \dfrac{\$13\,800 \times \frac{16}{12} \times \square}{100} = \$\_\_\_\_$

b $9500 at 12% p.a. for 15 days: $I = \dfrac{\$9500 \times \square \times \frac{15}{\square}}{100} = \$\_\_\_\_$ or $I = \dfrac{\$9500 \times \frac{12}{\square} \times \square}{100} = \$\_\_\_\_$

4 Calculate the simple interest on the following investments.

a $5600 at 13% p.a. for 16 months

b $2900 at 15% p.a. for 23 days

c $7890 at 18.6% p.a. for 11 months

d $3540 at 12.8% p.a. for 53 days

e $24 500 at 7.2% p.a. for 14 months

f $36 000 at 8.4% p.a. for 35 days

Calculate the total amount to be repaid on a loan of $8900 at 11% p.a. over 5 years.

Solve	Think	Apply
Interest $= \dfrac{\$8900 \times 11 \times 5}{100} = \$4895$ Total to be repaid $= \$8900 + \$4895$ $\qquad\qquad\qquad = \$13\,795$	Substitute $r = 11\%$ p.a. and $n = 5$ into the formula.	Total to be repaid $=$ amount borrowed $+$ interest

5 Complete the following to calculate the total to be repaid on a loan of $18 900 at 9.9% p.a. over 6 years.

Interest $= \dfrac{\$18\,900 \times \square \times \square}{100} = \$\_\_\_$

Total to be repaid $= \$18\,900 + \$\_\_\_ = \$\_\_\_$

6 Calculate the total amount to be repaid on a loan of:

a $4500 at 13% p.a. over 3 years

b $5750 at 0.9% per month over 15 months

c $7100 at 0.031% per day over 19 days

d $5290 at 14% p.a. over 17 months.

e $24 000 at 14.6% p.a. over 5 years

f $17 800 at 0.037% per day over 56 days

UNCORRECTED PAGE PROOFS

3B Credit card statements

Complete the following investigations to learn the meaning of the various terms on credit card statements and to investigate a number of the fees charged on card cards.

EXERCISE 3B

1 Consider the credit card statement shown below.
   a i What is the statement period?
      ii How many days is this?
   b i When is the minimum payment due?
      ii How many days is this from the start of the statement period?
   c What is the credit limit on this card?
   d What were the total debits for this period?
   e i What is the minimum payment due?
      ii What percentage is this of the closing balance?
   f What is the available credit?
   g Calculate the daily interest rate charges as a percentage and as a decimal for:
      i purchases   **ii** cash advances.

CREDIT CARD STATEMENT

Statement begins	14 April 2014
Statement ends	13 May 2014
Account number	XXXX 1234 5678 9000
Overdue amount due now	$0
Overlimit due now	$100
Payment due date	7 June 2014
Minimum amount due	$108.66

Opening balance	New charges	Payment received	Closing balance
$2864.00	+$958.00	−$200.00	$3622.00

Interest charged on purchases	Purchase rate 19.60%	Daily rate	
Interest charged on cash advances	Cash advance rate 21.40%	Daily rate	

Credit limit $10 000   Available credit $6378

3C Credit card calculations

Credit cards are issued by banks and financial institutions as a convenient way for consumers to purchase goods and services from vendors. The vendor is paid by the bank and the bank recovers the money from the cardholder. Naturally various fees and interest charges are applied by the banks for the use of this **credit** facility. The cardholder receives a monthly statement and must make a minimum payment of 2–5% of the balance owing. If you do not pay the account in full by the due date (say you only make the minimum payment), any amount outstanding is carried over and interest charges apply. Credit cards usually have a higher rate of interest than most other consumer loans. Different rates of interest may apply to purchases and cash advances. There is often an annual fee for the use of the card and fees may be charged for exceeding the credit limit or late payments. Many cards offer **interest-free days**.

The monthly statements below are for a credit card that has up to 55 interest-free days. The minimum payment is the greater of $10 or 3% of the closing balance. The statement period is from the first to the last day of the month. The due date is 55 days from the first day of the statement period. No interest is charged on retail purchases made during a statement period if you pay the closing balance in full by the due date and you have paid the closing balance of the previous statement in full by the due date. Note that:

- As the closing balance for each month is paid in full by the due date there is no interest charge for March and April.
- The minimum payment in April is $10 as this is greater than 3% of $223 ($6.69).
- The due date for purchases made in March is 24 April, 55 days from 1 March (the start of the statement period).
- The number of interest-free days is up to 55. Thus, the number of interest-free days for the purchase of furniture in March is 48 days (8 March to 24 April inclusive) and for hardware is 39 days (17 March to 24 April inclusive).
- The interest-free period does not apply to cash advances (such as ATM withdrawals). These transactions attract interest from the day they appear on your statement.

March statement		
Date	**Details**	**Amount ($)**
Mar 1	Opening balance	8
Mar 8	Furniture	1680
Mar 17	Hardware	67
Opening balance:	$0	
Closing balance:	$1747	
Minimum payment due:	$52.41	
Due date: 24 April		

April statement		
Date	**Details**	**Amount ($)**
April 11	Jeans	88
April 24	Payment	−1747
April 30	Sunglasses	135
Opening balance:	$1747	
Closing balance:	$223	
Minimum payment due:	$10	
Due date: 25 May		

May statement		
Date	**Details**	**Amount ($)**
May 9	Groceries	48
May 17	Electrical goods	136
May 25	Payment	−223
Opening balance:	$223	
Closing balance:	$184	
Minimum payment due:	$10	
Due date: 24 June		

EXERCISE 3C

Questions **1** to **3** refer to the credit card shown in the statements above.

1 The minimum payment for this credit card is the greater of $10 or 3% of the closing balance. Calculate the minimum payment due on these closing balances.

  a $96   **b** $390   **c** $1245   **d** $320

2 For this credit card, what would be the due date for purchases made in:

  a June?   **b** December?   **c** February (not a leap year)?

3 How many interest-free days are available for the purchase of:

  a jeans?   **b** sunglasses?   **c** groceries?   **d** electrical goods?

4 Complete these statements given that the statement period is from the first to the last day of the month, the minimum payment is the greater of $10 or 4% of the closing balance, there are up to 55 interest-free days and the closing balance is paid in full on the due date.

September statement		
Date	**Details**	**Amount ($)**
1 Sep	Opening balance	0
9 Sep	Clothes	80
18 Sep	Make-up	54
Opening balance:	$0	
Closing balance:	$___	
Minimum payment due:	$___	
Due date: 25 October		

October statement		
Date	**Details**	**Amount ($)**
5 Oct	Shoes	180
25 Oct	Payment	−___
29 Oct	Television set	967
Opening balance:	$___	
Closing balance:	$___	
Minimum payment due:	$___	
Due date: _____		

November statement		
Date	**Details**	**Amount ($)**
10 Nov	Groceries	48
16 Nov	DVDs	66
___ Nov	Payment	−___
Opening balance:	$___	
Closing balance:	$___	
Minimum payment due:	$___	
Due date: _____		

WORKED EXAMPLE 1

Calculate the total amount due on an ATM cash withdrawal of $400 using a credit card if the full amount is repaid after 15 days. The annual percentage rate (APR) for cash for the card is 21.5% and there is a fee of 1.5% of the cash advance amount.

Solve	Think	Apply
Interest charges $= \dfrac{\$400 \times 0.0589 \times 15}{100}$ $= \$3.53$ Cash advance fee $= \dfrac{1.5}{100} \times \$400 = \$6$ Total amount to be repaid $= \$400 + \$3.53 + \$6$ $= \$409.53$	Daily interest rate $=$ APR $\div$ 365 $= 0.0589\%$ Calculate the interest using $I = \dfrac{Prn}{100}$. Calculate the cash advance fee.	Interest on a cash withdrawal is calculated daily from the date of the transaction whether or not the card has an interest-free period. Daily interest rate $=$ APR $\div$ 365 days Interest charges $= \dfrac{\text{withdrawal} \times \text{daily interest rate} \times \text{number of days}}{100}$ Total amount due $=$ amount of withdrawal $+$ interest charges $+$ cash advance fee

FINANCIAL MATHEMATICS

5 Complete the following to calculate the total amount due on an ATM cash withdrawal of $500 using a credit card if the full amount is repaid after 23 days. The annual percentage rate for cash for the card is 22.9% and there is a fee of 1.5% of the cash advance amount.

Daily interest rate = ___% ÷ 365 = ___%

$$\text{Interest} = \frac{\$\square \times \square \times \square}{100} = \$\_\_\_$$

$$\text{Cash advance fee} = \frac{\square}{100} \times \$500 = \$\_\_\_$$

Total amount due = $500 + $___ + $___ = $___

6 Calculate the total amount due on an ATM cash withdrawal of $450 using a credit card if the full amount is repaid after 17 days. The annual percentage rate for cash is 20.9% and there is a fee of 1.5% of the cash advance amount.

7 Calculate the total amount due on an over-the-counter cash withdrawal of $150 using a credit card if it is repaid after 21 days. The annual percentage rate for cash is 19.8% and the cash advance fee is the greater of $2.50 or 1.5% of the cash advance amount.

WORKED EXAMPLE 2

Calculate the **average daily balance** for the month of May using the information in this credit card statement.

May statement

Date	Details	Amount ($)
1 May	Opening balance	64
10 May	Water rates	246
13 May	Petrol	47
20 May	Payment	−100
28 May	Shoes	75

Solve			Think	Apply

Solve

Daily balance ($)	Number of days	Aggregated balance ($)
64	9	576
310	3	930
357	7	2499
257	8	2056
332	4	1328
Total	31	7389

$$\text{Average daily balance} = \frac{\$7389}{31} = \$238.35$$

Rr use the statistics function on your calculator to find the mean of the 31 scores.

Think

The average daily balance is the average of the daily balances for each of the 31 days of the month. The balance at the end of each of the 9 days from 1 May to 9 May = $64.

The balance at the end of each of the 3 days from 10 May to 12 May = $64 + $246 = $310.

The balance at the end of each of the 7 days from 13 May to 19 May = $310 + $47 = $357.

The balance at the end of each of the 8 days from 20 May to 27 May = $357 − $100 = $257.

The balance at the end of each of the 4 days from 28 May to 31 May = $257 + $75 = $332.

Apply

Average daily balance = sum of balances at the end of each day ÷ number of days in the month

8   Complete the following table and find the average daily balance for the July statement shown.

July statement		
Date	Details	Amount ($)
1 Jul	Opening balance	38
5 Jul	Phone bill	149
16 Jul	Jeans	75
21 Jul	Payment	−80
25 Jul	Gym clothes	94

Daily balance ($)	Number of days	Aggregated balance ($)
38	4	152
187	11	
262		
182		
276		
Total		

9   Find the average daily balance for December.

03006_Photo of fruit shop

December statement		
Date	Details	Amount ($)
1 Dec	Opening balance	87
7 Dec	Council rates	488
14 Dec	Payment	−100
19 Dec	Fruit shop	43
24 Dec	Payment	−100

10   Find the average daily balance for June.

03007_Photo of an Australian native plant nursery

June statement		
Date	Details	Amount ($)
1 Jun	Opening balance	45
3 Jun	Electrical good	68
8 Jun	Office supplies	45
16 Jun	ipod shuffle	74
24 Jun	Payment	−150
29 Jun	Native plant nursery	82

WORKED EXAMPLE 3

Calculate the interest charges for purchases in April given that the annual percentage rate is 19.9%.

April statement

Date	Details	Amount ($)
1 Apr	Opening balance	37
7 Apr	Microwave oven	53
16 Apr	Hair dryer	29
23 Apr	Payment	−80

Solve

Daily balance ($)	Number of days	Aggregated balance ($)
37	6	222
90	9	810
119	7	833
39	8	312
Total	30	2177

Average daily balance $= \dfrac{\$2177}{30} = \$72.57$

Daily percentage rate $= 19.9\% \div 365 = 0.054\,52\%$

Monthly interest charges $= \dfrac{\$72.57 \times 0.054\,52 \times 30}{100} = \$1.19$

Think

Find the average daily balance for the month. Determine the daily percentage rate by dividing the annual percentage rate by the number of days in a year.

Calculate the monthly interest charges using

$I = \dfrac{Prn}{100}$ where n is the number of days in the month and r is the daily rate.

Apply

$\text{Interest} = \dfrac{\text{average daily balance} \times \text{daily interest rate} \times \text{number of days in month}}{100}$

Note: If you have a credit card with interest-free days and you do not pay the full closing balance by the due date, you will be charged interest on the outstanding balance for that statement period as well as any transactions made since the end of the period. Any interest charged on your account is debited on the last day of the statement period.

11 Complete the following to calculate the interest charges for purchases in May, given that the annual percentage rate is 18.6%.

Average daily balance $= \dfrac{\$\square}{31} = \$\underline{}$

Daily percentage rate $= \underline{}\% \div 365 = \underline{}\%$

Monthly interest charges $= \dfrac{\$\square \times \square \times 31}{100} = \$\underline{}$

May statement

Date	Details	Amount ($)
1 May	Opening balance	147
8 May	Groceries	88
20 May	Water rates	133
25 May	Payment	−100

Daily balance ($)	Number of days	Aggregated balance ($)
147	7	1029
235		
368		
268		
Total	31	

12 The annual percentage rate is 18.8% for the credit card statement shown on the right.

  a Find the daily percentage rate.

  b Calculate the average daily balance for purchases in September.

  c Calculate the interest charges for purchases in September.

September statement		
Date	**Details**	**Amount ($)**
1 Sep	Opening balance	135
10 Sep	Phone account	59
19 Sep	Books	136
24 Sep	Payment	−100

13 Calculate the interest charges for purchases in each of the months in questions **8** to **10** given that the annual percentage rate is 21.6%.

WORKED EXAMPLE 4

  a Create a 'ledger of spending' for the following transactions for the month of May.

  Opening balance = $235.

  Purchases on 5 May of $49, 10 May of $123 and 22 May of $86

  Cash advances on 15 May of $200 and 23 May of $100

  Payments on 12 May 12 of $50 and 29 May of $120

  b Calculate the interest charges for May given that the annual percentage rate is 17.5% p.a. for both purchases and cash withdrawals.

  c What is the closing balance for May?

  d Determine the minimum payment due if it is the greater of $30 or 5% of the closing balance.

Solve/Think				Apply
a				Construct a ledger showing the date, details, amount and balance.

a

May statement			
Date	**Details**	**Amount ($)**	**Balance ($)**
1 May	Opening balance	235	235
5 May	Purchase	49	284
10 May	Purchase	123	407
12 May	Payment	−50	357
15 May	Cash advance	200	557
22 May	Purchase	86	643
23 May	Cash advance	100	743
29 May	Payment	−120	623

Solve/Think			Apply

b

Daily balance ($)	Number of days	Aggregated balance ($)
235	4	940
284	5	1 420
407	2	814
357	3	1 071
557	7	3 899
643	1	643
743	6	4 458
623	3	1 869
Total	31	15 114

Calculate the average daily balance.
Calculate the daily percentage rate.
Calculate the interest using $I = \dfrac{Prn}{100}$ where n is the number of days in the month and r is the daily interest rate.

Average daily balance $= \dfrac{\$15\,114}{31} = \$487.55$

Interest $= \dfrac{\$487.55 \times \dfrac{17.5}{365} \times 31}{100} = \$7.25$

c Closing balance $= \$623 + \$7.25$
$\qquad\qquad\quad = \$630.25$

Closing balance = balance on 31 May plus the interest for the month

d 5% of $630.25 = \$31.51$
Minimum payment due = the greater of 5% of $630.25 or $30
$\qquad\qquad = \$31.51$

Calculate 5% of the closing balance. The minimum payment due is the greater of this amount and $30.

14 a Complete the ledger shown for the following transactions for the month of July.
Opening balance = $637
Purchases on 4 July of $126, 11 July of $59 and 23 July of $93
Cash advances on 10 July 10 of $200 and 25 July of $250
Payments on 14 July of $100 and 26 July of $150

July statement

Date	Details	Amount ($)	Balance ($)
1 July	Opening balance		
4 July	Purchase		
10 July	Cash advance		
11 July	Purchase		
14 July	Payment		
23 July	Purchase		
25 July	Cash advance		
26 July	Payment		

b Complete the following table and calculate the interest charges for July given that the annual percentage rate is 18.6% p.a. for both purchases and cash withdrawals.

Daily balance ($)	Number of days	Aggregated balance ($)
637	3	1911
Total	31	

Average daily balance $= \dfrac{\$\Box}{31} = \$\underline{\ \ }$

Interest $= \dfrac{\$\Box \times \dfrac{\Box}{365} \times \Box}{100} = \$\underline{\ \ }$

c Closing balance $= \$\underline{\ \ } + \$\underline{\ \ }$

d If the minimum payment due is the greater of 5% of the closing balance or $30, find the minimum payment due for the month of July.

15 a Create a 'ledger of spending' for the following transactions for the month of November.
Opening balance $= \$517$
Purchases on 6 November of $29, 13 November of $134, 19 November of $97 and 24 November of $166
Cash advances on 12 November of $200 and 25 November of $150
Payments on 7 November of $300 and 20 November of $100

b Calculate the interest charges for November given that the annual percentage rate is 19.4% p.a. for both purchases and cash withdrawals.

c What is the closing balance for November?

d Determine the minimum payment due if it is the greater of $25 or 4% of the closing balance.

WORKED EXAMPLE 5

How long will it take to pay off a credit card debt of $1000 if the annual interest rate is 18.5% and you only make the minimum payment each month (assuming no other transactions)? How much interest will you pay?

Solve	Think
It would take approximately 8 years to repay this debt and you would pay about $924 in interest.	There are calculators available via the internet which will do these calculations for you. Try *www.moneysmart.gov.au* and go to (more) calculators, then credit card calculator (under borrowing and credit).

16 Use an internet calculator to find the time it would take to repay various credit card balances if you only make the minimum repayment each month. How much interest would be charged? How much can be saved by increasing your monthly repayment by $5, $10, etc.?

INVESTIGATION **3.1**

Credit card statements

1 Investigate the meaning of the following terms when used in credit card statements. Write the meaning of each term and make notes or give examples of any additional information that is useful to understand them.

annual percentage rate, available credit, cash advance, closing balance, credit limit, interest-free period/days, minimum amount due, opening balance, overdue amount/outstanding balance, overlimit amount, statement period/billing cycle

An example is shown below.

Term	Meaning	Notes
Cash advance	Cash withdrawn from a credit card account	This could include: • withdrawing cash at an ATM • taking out cash when making a purchase at a store • using a credit card to gamble online or at a casino

2 Compare your findings with those of the rest of the class and make a master list for everyone to use.

INVESTIGATION **3.2**

Credit card fees

Investigate and make a list of the following current credit card fees:

annual/monthly fee, cash advance fee, late payment fee, overlimit fee, card replacement fee, copy fees, payment dishonour fee, international transaction fee

INVESTIGATION **3.3**

Debit cards

Investigate the difference between creditcards and debit cards. What are the advantages and disadvantages of each?

03009_Photo of kinds of different credit
cards and debit cards

Language and terminology

Here is a list of terms used in this chapter. Explain each term in a sentence.

annual percentage rate, available credit, cash advance, closing balance, credit limit, interest-free days/interest-free period, minimum amount due, opening balance, overdue amount/outstanding balance, overlimit amount, statement period/statement cycle

Having completed this chapter you should be able to:

* interpret credit card statements and perform related calculations
* create a 'ledger of spending'
* identify the various fees and charges associated with credit card use
* express a percentage annual interest rate as a daily interest rate in percentage and decimal form
* calculate the interest for one billing cycle
* understand the differences between credit and debit cards.

3 REVIEW TEST

Samantha is going on a holiday. She borrows $3500 over 3 years at a flat interest rate of 8% p.a. Use this information to answer questions **1** and **2**.

03010_Photo of Samantha on her holiday

1 The simple interest charged by the lending institution is:
A $908.99   **B** $840
C $280   **D** $93.33

2 The total to be repaid by Samantha is:
A $3500   **B** $3780
C $4340   **D** $4408.99

3 The simple interest payable on a loan of $4350 at a simple interest rate of 9.5% p.a. for a period of $2\frac{1}{2}$ years is closest to:
A $413.25   **B** $103 312.50   **C** $1033.00   **D** $1033.13

4 The simple interest payable on a loan of $2380 at a simple interest rate of 7.45% p.a. for a period of 17 months is:
A $251.19   **B** $251.20   **C** $2481.88   **D** $101.88

5 The minimum payment on a credit card is the greater of $10 or 4% of the closing balance. The minimum payment on a closing balance of $320 is:
A $10   **B** $4   **C** $12.80   **D** $1.28

UNCORRECTED PAGE PROOFS

6 A credit card offers 55 days interest free from the start of the statement period. The statement period is from the first to the last day of the month. Assuming that all conditions necessary for the interest-free days have been satisfied, the due date for purchases made in May is:

A 24 June   B 25 June   C 24 May   D 25 May

Use this credit card statement to answer questions **7** and **8**.

7 The average daily balance for August is:

A $393.16   B $402.55
C $406.27   D $415.97

8 If the annual percentage rate is 19.6%, the interest charges for August would be:

A $6.33   B $6.54
C $6.48   D $6.70

August statement		
Date	**Details**	**Amount ($)**
1 Aug	Opening balance	246
10 Aug	Water rates	395
16 Aug	Purchases	83
21 Aug	Payment	−500
27 Aug	Purchases	67

If you have any difficulty with these questions, refer to the examples and questions in the sections listed in the table.

Question	1–4	5–8
Section	A	C

3A REVIEW SET

1 Angela is going on a holiday. She borrows $4000 over 4 years at a flat interest rate of 9% p.a.
  a Find the simple interest charged.
  b Find the total amount to be repaid.

2 Find the simple interest payable on a loan of $7200 at a simple interest rate of 11.5% p.a. for a period of:
  a $3\frac{1}{2}$ years   b 15 months   c 35 days.

3 The minimum payment on a credit card is the greater of $10 or 4% of the closing balance. Calculate the minimum payment on these closing balances.
  a $520   b $240

4 A credit card offers 55 days interest free from the start of the statement period. The statement period is from the first to the last day of the month. Assuming that all conditions necessary for the interest-free days have been satisfied, determine the due date for purchases made in these months.
  a June   b October

Use this credit card statement to answer questions **5** and **6**.

5 Calculate the average daily balance for September.

6 If the annual percentage rate is 19.6%, calculate the interest charges for September.

September statement		
Date	**Details**	**Amount ($)**
1 Sep	Opening balance	346
9 Sep	Purchase	195
19 Sep	Purchase	68
24 Sep	Payment	−400
27 Sep	Purchase	53

3B REVIEW SET

1 Paul wants to buy a bicycle. He borrows $2300 over 3 years at a flat interest rate of 8.5% p.a.
  a Find the simple interest charged.
  b Find the total amount to be repaid.

2 Find the simple interest payable on a loan of $3450 at a simple interest rate of 9.6% p.a. for a period of:
  a $1\frac{1}{2}$ years
  b 19 months
  c 27 days.

3 The minimum payment on a credit card is the greater of $12.50 or 5% of the closing balance. Calculate the minimum payment on these closing balances.
  a $220
  b $490

4 A credit card offers 55 days interest free from the start of the billing cycle. The billing cycle is from 10 May to 9 June. Assuming that all conditions necessary for the interest-free days have been satisfied, determine the due date for purchases made in this billing cycle.

Use this credit card statement to answer questions **5** and **6**.

5 Calculate the average daily balance for March.

6 If the annual percentage rate is 21.6%, calculate the interest charges for March.

March statement		
Date	**Details**	**Amount ($)**
1 Mar	Opening balance	721
9 Mar	Purchase	356
19 Mar	Purchase	49
24 Mar	Payment	−600
27 Mar	Purchase	73

3C REVIEW SET

1 Georgia is going on a holiday. She borrows $6000 over 3 years at a flat interest rate of 8% p.a.
  a Find the simple interest charged.
  b Find the total to be repaid.

2 Find the simple interest payable on a loan of $4670 at a simple interest rate of 7.9% p.a. for these periods.
  a $3\frac{1}{2}$ years
  b 21 month
  c 33 days

UNCORRECTED PAGE PROOFS

3 The minimum payment on a credit card is the greater of $10 or 3% of the closing balance. Calculate the minimum payment on these closing balances.

  a $460   **b** $310

4 A credit card offers 45 days interest free from the start of the statement period. The billing cycle is from 5 July to 4 August. Assuming that all conditions necessary for the interest-free days have been satisfied, determine the due date for purchases made in this billing cycle.

Use this credit card statement to answer questions **5** and **6**.

5 Calculate the average daily balance for March.

6 If the annual percentage rate is 22.4%, calculate the interest charges for March.

March statement		
Date	**Details**	**Amount ($)**
1 Mar	Opening balance	526
10 Mar	Purchase	156
21 Mar	Purchase	38
23 Mar	Payment	−200
25 Mar	Purchase	52

3D REVIEW SET

1 Henry wants to buy a sound system. He borrows $1750 over 2 years at a flat interest rate of 7.3% p.a.
  a   Find the simple interest charged.
  b   Find the total to be repaid.

2 Find the simple interest payable on a loan of $7500 at a simple interest rate of 9.9% p.a. for these periods.
  a $2\frac{1}{2}$ years   **b**   19 months   **c**   35 days

3 The minimum payment on a credit card is the greater of $15 or 5% of the closing balance. Calculate the minimum payment on these closing balances.
  a $880   **b** $226

4 A credit card offers 45 days interest free, from the start of the statement period. The statement period is from the first to the last day of the month. Assuming that all conditions necessary for the interest-free days have been satisfied, determine the due date for purchases made in these months.
  a   January   **b**   April

Use this credit card statement to answer questions **5** and **6**.

5 Calculate the average daily balance for June.

6 If the annual percentage rate is 22.1%, calculate the interest charges for June.

June statement		
Date	**Details**	**Amount ($)**
1 Jun	Opening balance	589
8 Jun	Purchase	135
15 Jun	Purchase	68
21 Jun	Payment	−450
24 Jun	Purchase	33

3 EXAMINATION QUESTION (15 MARKS)

a Calculate the simple interest on a loan of $5760 at 12.6% p.a. for these periods.

    i $2\frac{1}{2}$ years   **ii** 17 months   **iii** 28 days   (4 marks)

b Kerri borrows $8000 to buy a car. The flat interest rate is 8.6% p.a.
and she takes the loan over 5 years. Calculate the total amount to be repaid.   (3 marks)

c The minimum payment due on a credit card is the greater of $30 or 5% of the
closing balance. Calculate the minimum payment due on a closing balance of $618.   (2 mark)

d A credit card offers 55 interest-free days from the start of the billing cycle.
The billing cycle is from the first day to the last day of the month . Assuming
all the conditions necessary for the interest-free days have been satisfied,
determine the due date for purchases made in July.   (1mark)

e Use this credit card statement to answer parts **i** and **ii**.

May statement		
Date	**Details**	**Amount ($)**
1 May	Opening balance	174
12 May	Electricity bill	327
17 May	Purchase	85
21 May	Payment	−200
26 May	Purchase	166

    i Complete the following table to calculate the average daily balance for the month.   (3 marks)

Daily balance ($)	Number of days	Aggregated balance ($)
174	11	1914
501		
586	4	2344
386	5	1930
552	6	3312
Total		

    ii Calculate the interest charges for May if the annual percentage rate is 18.4% p.a.   (2 marks)