

**Topic test 6****Saving and borrowing**

- Time allowed: 45 minutes
- Part A: 20 multiple-choice questions (40 marks)
- Part B: 15 free-response questions (60 marks)

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

**Part A****20 multiple-choice questions****2 marks each: 40 marks**

Circle the correct answer.

- 1 How many weeks in 4 years?  
A 480                      B 208  
C 192                      D 104
- 2 Calculate the simple interest when \$4000 is invested at 5.5% p.a. for 2 years.  
A \$440                      B \$4440  
C \$452.10                      D \$4452.10
- 3 Marco borrows \$27 500 to buy a car. He repays the loan in fortnightly instalments of \$264.40 over 5 years. Calculate the interest paid.  
A \$6872.00                      B \$26 178  
C \$4124.40                      D \$11 636
- 4 What principal must I invest at 6% p.a. for 3 years in order to earn simple interest of \$1530?  
A \$3060                      B \$7650  
C \$2754                      D \$8500
- 5 \$4200 is invested at 5.1% p.a. compound interest for 3 years. What is the final amount of the investment?  
A \$642.60                      B \$4842.60  
C \$675.93                      D \$4875.93
- 6 A digital camera costing \$450 is bought on lay-by. A 5% deposit is paid, with the balance paid off after 5 months. Calculate the size of each monthly repayment.  
A \$85.50                      B \$94.50  
C \$91.88                      D \$112.50
- 7 Trish paid a total of \$12 252.50 over 3 years for a large-screen TV with a cash price of \$8450. Calculate the flat interest rate p.a.  
A 31.03%                      B 15%  
C 10.34%                      D 4.5%
- 8 The NCM credit card charges interest at a rate of 18% p.a. on any outstanding balance. Calculate the interest charged on a balance of \$1490 for 30 days.  
A \$22.04                      B \$8.94  
C \$80.46                      D \$89.40
- 9 George borrowed \$40 000 from a bank that charges 7% p.a. flat interest over 8 years. Calculate the total amount George will pay.  
A \$62 400                      B \$42 800  
C \$22 400                      D \$2800
- 10 An amount of \$6500 is invested at 7.2% p.a., compounded quarterly over 4 years. Calculate the final amount of the investment.  
A \$8980.79                      B \$8647.25  
C \$8584.06                      D \$8372.00
- 11 Lisa borrowed \$10 000 to pay for a holiday at a reducible interest rate of 9.5% p.a. She makes yearly repayments of \$3000. Calculate the amount still owing after the first year.  
A \$7665                      B \$7000  
C \$10 950                      D \$7950
- 12 A printer valued at \$550 depreciates by 21% each year. Calculate its total depreciation over 3 years.  
A \$278.93                      B \$162.67  
C \$271.17                      D \$346.50
- 13 Calculate the simple interest earned on an investment of \$2800 at 7% over 18 months.  
A \$108.89                      B \$196.00  
C \$294.00                      D \$352.80
- 14 Melinda invested \$100 000 for 2 years at 12% p.a. with interest compounding every 6 months. Calculate the final amount of this investment.  
A \$141 851.91                      B \$126 247.69  
C \$125 440.00                      D \$124 000.00

**Topic test 6: Saving and borrowing *continued***

- 15 After being invested for 6 years, a principal of \$4500 earned \$1890 in simple interest. What is the interest rate per annum?  
A 4.2%                      B 7%  
C 14.3%                     D 25.2%
- 16 A photocopier purchased for \$1000 depreciates at a rate of 30% p.a. After how many full years will its value fall below \$450?  
A 2                              B 3  
C 4                              D 5
- 17 Theo invested \$3000 at 8% p.a. compound interest for 2 years. Calculate the interest earned.  
A \$480                        B \$499.20  
C \$3480.00                 D \$3499.20
- 18 Sophie buys a video camera marked at \$1100. She pays by 24 monthly instalments of \$60.51. Calculate the flat interest rate p.a.  
A 6.60%                     B 3.52%  
C 16.01%                    D 32.02%
- 19 \$7000 is invested at 6% p.a. compounded yearly. How many whole years will it take to double?  
A 11                            B 12  
C 14                            D 15
- 20 Owen borrowed \$8500 over 3 years at a flat interest rate of 12.5% p.a. Calculate his monthly repayment.  
A \$97.40                     B \$236.12  
C \$265.63                    D \$324.65
- 22 (2 marks) \$8000 invested for 4 years earns \$584 in interest. What is the interest rate p.a.?
- 23 (4 marks) A principal of \$14 000 is invested at 3.75% p.a. compounded monthly for 5 years. Calculate:  
a the final amount of the investment  
b the interest earned.
- 24 (2 marks) With compound interest on an investment, is it better for the interest to be compounded quarterly or monthly? Give a reason for your answer.
- 25 (4 marks) A \$28 000 car depreciates by 18% each year.  
a How much is it worth after 3 years?  
b What is the total amount of depreciation?

**Part B**

**15 free-response questions**

**60 marks**

Show working where appropriate.

- 21 (4 marks) Calculate the simple interest when \$5600 is borrowed at 9% p.a. for:  
a 7 months  
b  $2\frac{1}{2}$  years

**Topic test 6: Saving and borrowing *continued***

**26** (10 marks) Rena bought a refrigerator with a cash price of \$1090 by paying 15% deposit followed by weekly repayments over 6 months, with interest calculated on the balance owing (after the deposit) at 7.5% p.a. Calculate:

**a** the deposit

**b** the balance owing

**c** the interest charged

**d** the total amount owing

**e** the size of each weekly repayment.

**27** (4 marks) The table below comes from a credit card monthly statement. If the minimum payment is 5% of the closing balance, complete the table.

Opening balance	\$2410.50
Purchases this month	\$865.20
Payments this month	\$722.80
Closing balance	
Minimum payment	

**28** (4 marks)

Compound interest table Final amount of a \$1 investment (\$)							
Interest rate per period							
No. of periods	2%	2.5%	3%	3.5%	4%	4.5%	5%
1	1.02	1.025	1.03	1.035	1.04	1.045	1.05
2	1.0404	1.0506	1.0609	1.0712	1.0816	1.092	1.1025
3	1.0457	1.0769	1.0927	1.1087	1.1249	1.1412	1.1576
4	1.0824	1.1038	1.1255	1.1475	1.1699	1.1925	1.2155
5	1.1041	1.1314	1.1593	1.1877	1.2167	1.2462	1.2763
6	1.1262	1.1597	1.1941	1.2293	1.2653	1.3023	1.3401
7	1.1487	1.1887	1.2299	1.2723	1.3159	1.3609	1.4071
8	1.1717	1.2184	1.2668	1.3168	1.3686	1.4221	1.4775
9	1.1951	1.2489	1.3048	1.3629	1.4233	1.4861	1.5513

Use the table to calculate the final amount when \$3600 is invested:

**a** at 4% p.a. compounded yearly for 8 years

**b** at 5% p.a. compounded half-yearly for 3 years.

**29** (4 marks) James borrows \$22 000 at a flat interest rate of 11% p.a. to be repaid over 3 years by monthly repayments. Calculate the size of a monthly repayment.

**Topic test 6: Saving and borrowing *continued***

30 (4 marks)

Loan	Monthly Repayments	
	24 months	36 months
\$5000	\$250	\$181
\$7000	\$349	\$253
\$12 000	\$599	\$434
\$20 000	\$998	\$723

Julie borrows \$7000 and repays the loan in 3 years. Use the table to calculate how much interest she pays.

31 (6 marks) Felicity bought a \$2495 computer by deferred payment. There was no deposit, nothing to pay for 6 months, then 18 monthly payments of \$155.94. Calculate:

a the total cost of the computer

b the interest charged

c the flat interest rate p.a. correct to two decimal places

32 (4 marks) Each year, a \$2400 computer depreciates by 25%. By how much will it depreciate in the second year?

33 (2 marks) Susan earned \$681.60 simple interest on an investment of \$3200 for 3 years. Calculate the interest rate p.a.

34 (2 marks) Calculate the compound interest earned when \$2700 is invested at 4.3% p.a. for 4 years.

35 (4 marks) This loan repayments table shows the monthly repayment for every \$1000 borrowed.

Interest rate (% p.a.)	Period of loan (years)				
	5	10	15	20	25
7	\$19.80	\$11.61	\$9.00	\$7.75	\$7.07
8	\$20.28	\$12.13	\$9.56	\$8.36	\$7.72
9	\$20.76	\$12.67	\$10.14	\$9.00	\$8.39
10	\$21.25	\$13.22	\$10.75	\$9.65	\$9.10

Ken borrowed \$80 000 at 9% p.a. over 20 years.

a Calculate his monthly repayment.

b Calculate the interest paid.

**END OF TEST.**

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## Topic test 6

# Saving and borrowing

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### Part A

20 multiple-choice questions

2 marks each: 40 marks

Circle the correct answer.

$\frac{22}{40}$

- 1 How many weeks in 4 years?  
 A 480                       B 208  
 C 192                      D 104
- 2 Calculate the simple interest when \$4000 is invested at 5.5% p.a. for 2 years.  
 A \$440                      B \$4440  
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 A \$8980.79                       B \$8647.25  
 C \$8584.06                      D \$8372.00
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**Topic test 6: Saving and borrowing continued**

15 After being invested for 6 years, a principal of \$4500 earned \$1890 in simple interest. What is the interest rate per annum?

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- A 2                              B 3  
C 4                              D 5

17 Theo invested \$3000 at 8% p.a. compound interest for 2 years. Calculate the interest earned.

- A \$480                       B \$499.20  
C \$3480.00                  D \$3499.20

18 Sophie buys a video camera marked at \$1100. She pays by 24 monthly instalments of \$60.51. Calculate the flat interest rate p.a.

- A 6.60%                      B 3.52%  
 C 16.01%                      D 32.02%

19 \$7000 is invested at 6% p.a. compounded yearly. How many whole years will it take to double?

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20 Owen borrowed \$8500 over 3 years at a flat interest rate of 12.5% p.a. Calculate his monthly repayment.

- A \$97.40                      B \$236.12  
 C \$265.63                       D \$324.65

**Part B**

15 free-response questions  
60 marks

Show working where appropriate.

21 (4 marks) Calculate the simple interest when \$5600 is borrowed at 9% p.a. for:

a 7 months

$$5600 \times 9\% \times \frac{7}{12} = \$294$$

b 2½ years

$$5600 \times 9\% \times 2.5 = \$1260$$

22 (2 marks) \$8000 invested for 4 years earns \$584 in interest. What is the interest rate p.a.?

$$100 \times 584 = (8000 \times \frac{r}{100} \times 4)$$

$$\frac{58400}{8000} = \frac{8000 \times r \times 4}{8000}$$

$$\frac{7.3}{4} = \frac{r \times 4}{4}$$

$$r = 1.825\%$$

23 (4 marks) A principal of \$14 000 is invested at 3.75% p.a. compounded monthly for 5 years. Calculate:

a the final amount of the investment

$$\$16,882.29$$

b the interest earned.

$$16882.29 - 14000 =$$

$$\$2882.29$$

24 (2 marks) With compound interest on an investment, is it better for the interest to be compounded quarterly or monthly? Give a reason for your answer.

The earlier you receive interest to more money you will make  
∴ monthly

25 (4 marks) A \$28 000 car depreciates by 18% each year.

a How much is it worth after 3 years?

$$\therefore 28000 \times 18\% \times 3 \text{ Use Depreciation Formula}$$

$$= \$15,120$$

$$A = P(1 - \frac{r}{100})^n$$

$$\$15,120$$

Try again

b What is the total amount of depreciation?

$$28000 - 15120$$

$$= \$12880$$

$$\$12561.70$$

**Topic test 6: Saving and borrowing continued**

26 (10 marks) Rena bought a refrigerator with a cash price of \$1090 by paying 15% deposit followed by weekly repayments over 6 months, with interest calculated on the balance owing (after the deposit) at 7.5% p.a. Calculate:

a the deposit

$$1090 \times 15\% = \$163.50 \checkmark$$

b the balance owing

$$1090 - 163.5 = \$926.50 \checkmark$$

c the interest charged

$$926.5 \times 3.75\% = \$37.35 \checkmark$$

d the total amount owing

$$926.5 + 37.35 = \$963.85 \checkmark$$

e the size of each weekly repayment.

$$\frac{963.85}{26} = 26.09 = \$35.51$$

number of weeks in 6 mths.

$$= \$37.07$$

27 (4 marks) The table below comes from a credit card monthly statement. If the minimum payment is 5% of the closing balance, complete the table.

Opening balance	\$2410.50
Purchases this month	\$865.20
Payments this month	\$722.80
Closing balance	\$2552.90 ✓
Minimum payment	\$127.65 ✓

28 (4 marks)

Compound interest table							
Final amount of a \$1 investment (\$)							
Interest rate per period							
No. of periods	2%	2.5%	3%	3.5%	4%	4.5%	5%
1	1.02	1.025	1.03	1.035	1.04	1.045	1.05
2	1.0404	1.0506	1.0609	1.0712	1.0816	1.092	1.1025
3	1.0457	1.0769	1.0927	1.1087	1.1249	1.1412	1.1576
4	1.0824	1.1038	1.1255	1.1475	1.1699	1.1925	1.2155
5	1.1041	1.1314	1.1593	1.1877	1.2167	1.2462	1.2763
6	1.1262	1.1597	1.1941	1.2293	1.2653	1.3023	1.3401
7	1.1487	1.1887	1.2299	1.2723	1.3159	1.3609	1.4071
8	1.1717	1.2184	1.2668	1.3168	1.3686	1.4221	1.4775
9	1.1951	1.2489	1.3048	1.3629	1.4233	1.4861	1.5513

Use the table to calculate the final amount when \$3600 is invested:

a at 4% p.a. compounded yearly for 8 years

$$1.3686 \times 3600 = \$4926.96 \checkmark$$

b at 5% p.a. compounded half-yearly for 3 years.

$$1.1597 \times 3600 = \$4168.44 \checkmark$$

29 (4 marks) James borrows \$22 000 at a flat interest rate of 11% p.a. to be repaid over 3 years by monthly repayments. Calculate the size of a monthly repayment.

$$22000 \times 11\% \times 3 = 7260 \checkmark$$

$$\$29260 \leftarrow \text{total incl. interest}$$

$$29260 \div 36 = \$812.79 \checkmark$$

**Topic test 6: Saving and borrowing continued**

30 (4 marks)

Loan	Monthly Repayments	
	24 months	36 months
\$5000	\$250	\$181
\$7000	\$349	\$253
\$12 000	\$599	\$434
\$20 000	\$998	\$723

Julie borrows \$7000 and repays the loan in 3 years. Use the table to calculate how much interest she pays.

Monthly repayments = \$253 ✓  
 Interest paid =  $253 \times 36 - 7000$   
 = \$2108

31 (6 marks) Felicity bought a \$2495 computer by deferred payment. There was no deposit, nothing to pay for 6 months, then 18 monthly payments of \$155.94. Calculate:

a the total cost of the computer

$155.94 \times 18$   
 = \$2806.92 ✓

b the interest charged

$2806.92 - 2495$   
 = \$311.92 ✓

c the flat interest rate p.a. correct to two decimal places

$311.92 = 2495 \times \frac{r}{100} \times 2$   
 $r = 6.25$

32 (4 marks) Each year, a \$2400 computer depreciates by 25%. By how much will it depreciate in the second year?

1st yr / \$600 a year.

2nd yr /  $1800 \times 25\% =$  \$450

33 (2 marks) Susan earned \$681.60 simple interest on an investment of \$3200 for 3 years. Calculate the interest rate p.a.

$681.6 = 3200 \times \frac{r}{100} \times 3$   
 $\frac{68160}{3200} = \frac{r \times 3}{100}$   
 $21.3 = \frac{r \times 3}{100}$   
 $r = 7.1\%$

34 (2 marks) Calculate the compound interest earned when \$2700 is invested at 4.3% p.a. for 4 years.

$A = 2700 \times \left(1 + \frac{4.3}{100}\right)^4$   
 $= 2700 \times (1.043)^4$   
 $A = 3195.22 - 2700$   
 = \$495.22

35 (4 marks) This loan repayments table shows the monthly repayment for every \$1000 borrowed.

Interest rate (% p.a.)	Period of loan (years)				
	5	10	15	20	25
7	\$19.80	\$11.61	\$9.00	\$7.75	\$7.07
8	\$20.28	\$12.13	\$9.56	\$8.36	\$7.72
9	\$20.76	\$12.67	\$10.14	<u>\$9.00</u>	\$8.39
10	\$21.25	\$13.22	\$10.75	\$9.65	\$9.10

Ken borrowed \$80 000 at 9% p.a. over 20 years.

a Calculate his monthly repayment.

$\frac{80000}{20 \times 12} =$  \$600 ✓  $\rightarrow$  \$720

b Calculate the interest paid.

$720 \times 20 \times 12 =$  \$172 800  
 $80000 \times 9\% \times 20 =$  \$144 000  
 $172800 - 144000 =$  \$28 800

END OF TEST.

Use the back of this page for extra working space.