But can you afford it?

UNIT 14

This unit presents the students with a range of financial situations in which they are asked to do relevant calculations. At the same time, they are encouraged to think about their personal responsibility in the areas of borrowing and debt.

Mathematical content

Number (AT2)
◆ **Using a calculator sensibly**
◆ **Understanding and calculating with percentages**

Using this unit

The unit is designed primarily for students at the Foundation/ Intermediate Tier of GCSE. The unit involves arithmetic calculations. Although the calculations are not difficult, students may need support to interpret what are sometimes complex contexts. The unit should last for 3–4 hours.

The unit has five main sections in which students consider different personal financial contexts. In each case they learn about the context and do some associated calculations. Some questions encourage them to think about the associated risks and responsibilities in each situation. These can act as a starting point for opening up discussion.

Spiritual and moral development

The aim of the unit is to encourage students to consider their personal ethical responsibility when making financial decisions, especially those involving debt.

❖ Students need a calculator, protractor and ruler.

TEACHER'S NOTES

Background

In much of life, it is now the norm to be in debt. We live in a society in which it is now much easier than it used to be to borrow money and purchase goods in advance of payment. There are more and more ways in which people are encouraged to spend money they do not have. The language of debt has changed and people now talk of how "credit" worthy they are. Sadly some people can get into situations of spiralling debt through a combination of credit cards, hire purchase, bank loans, loan sharks etc.

Young people are particularly vulnerable given the great pressures there are on them to spend. This means that there is a need to help students to become aware of the risks and responsibilities associated with their use of money.

Notes on the activities

Hello John, got a new motor?

This first activity focuses on making decisions based on a planned budget. It requires only simple calculations.

Class discussion

The issues raised by this first task could lead to discussion involving:
- ◆ the need to plan personal budgets;
- ◆ the difficulties that can arise when you have unexpected extra expenditure.

Better drum up some money then

The second activity focuses on different types of hire purchase agreement. It is important that students are clear on the different payment options.

Class discussion

The main issue raised by this task is the pressure to buy now and pay later and the discussion could address:
- ◆ the possible merit of saving up for things;
- ◆ the circumstances that can lead to difficulties in keeping up with payments (question 6);
- ◆ the risks of using a hire purchase agreement (question 7).

There's no place like home

This activity looks at another kind of borrowing which is really another form of debt. To take out a mortgage seems a very reasonable thing to do, but what was a safe investment and a normal thing to do some years ago is now very much more risky. Many people have got into trouble with house prices falling or through redundancy.

It is important that students understand that with a repayment mortgage they are partly paying interest and partly repaying the mortgage. (The model used is slightly simplified in that calculations are based on an annual calculation rather than a monthly calculation.) In question 2, students are asked to copy out and complete the table shown in order to calculate the money owed at the end of Year 2. They are asked to do this twice more in question 3. An optional worksheet with these three tables already prepared is included at the end of these Teacher's Notes.

Question 4 has a potential extension of following through the mortgage payments over 25 years. This would be best tackled using a spreadsheet.

Class discussion

This task addresses the largest debt the students are ever likely to face. The discussion could therefore focus on:
- ◆ their own expectations in this area;
- ◆ the problem of rising interest rates;
- ◆ other risks of having a mortgage such as illness and redundancy.

T E A C H E R ' S   N O T E S

Paul and his plastic friend

This activity examines the financial costs of using a credit card. As with the mortgage task, the model for calculating interest has been simplified - it is actually charged from the date that each item appears on the account.

Questions 2 and 3 require clear understanding of how the balance and interest is calculated, so some students may require support. A blank statement for question 3 is included at the end of the Teacher's Notes.

Class discussion

This task highlights the large interest charges that can come with credit cards and so the discussion could address:

◆ advantages of credit cards such as not needing cash, just making a single payment at the end of the month, keeping money in a savings account for longer;

◆ disadvantages and risks of using credit cards such as the danger of building up debt quickly.

Lend us some dosh, mate

In this final activity the dangers of taking a loan with very high interest is examined.

Question 3 and 5a) are more difficult and some students may need support.

Class discussion

It is good to end the unit by drawing together the students' thoughts on the last task and the unit as a whole. This could include:

◆ situations that might lead people to take out expensive loans;

◆ students' reactions to the rate at which interest can build up;

◆ whether their views on how to save and spend money have been affected by the unit.

Answers

Task 1:
1. £45.
2. £22.50.
3. £42.50.

4. Yes, £2.50 spare.
5. a) and b)
Option 1: Paying in full would require 40 weeks of spare cash, or possibly using luxuries and holiday savings money.
Option 2: Paying the £50 would require 20 weeks of spare cash, or possibly using luxuries and holiday savings money. However, this also leaves John with very little spare cash each week.

Task 2:
1. 9 months.
2. a) £460, 2 months.
   b) £480.
   c) £540.
3. Yes, after 6 months £300 will have been saved. After this each month she saves £50 and pays £90. After 12 months she will be £60 in credit.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Saving	50	50	50	50	50	50	50	50	50	50	50	50
Payment	0	0	0	0	0	0	90	90	90	90	90	90
Balance	50	100	150	200	250	300	260	220	180	140	100	60

4. £45.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Saving	45	45	45	45	45	45	45	45	45	45	45	45
Payment	0	0	0	0	0	0	90	90	90	90	90	90
Balance	45	90	135	180	225	270	225	180	135	90	45	0

5. a) Yes

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Saving	50	50	50	50	50	0	0	50	50	50	50	50	50	50
Payment	0	100	30	30	30	30	30	30	30	30	30	30	30	30
Balance	50	0	20	40	60	30	0	20	40	60	80	100	120	140

   b) No

Month	1	2	3	4	5	6	7	8	9	10	11	12
Saving	50	50	50	50	50	0	0	50	50	50	50	50
Payment	40	40	40	40	40	40	40	40	40	40	40	40
Balance	10	20	30	40	50	10	-30	-20	-10	0	10	20

   c) No

Month	1	2	3	4	5	6	7	8	9	10	11	12
Saving	50	50	50	50	50	0	0	50	50	50	50	50
Payment	0	0	0	0	0	0	90	90	90	90	90	90
Balance	50	100	150	200	250	250	160	120	80	40	0	-40

   d) She would have to delay her purchase by two more months.

TEACHER'S NOTES

6. a) Answers could include sickness, redundancy, other more expensive bills.

    b) This answer should weigh up the relative risks of falling behind on payments and also the value of
        waiting until money is saved.

Task 3:

1. It is less than 1/25. In the early years more money goes towards interest than repaying what is owed.
    As time goes by this changes as the interest payments become less and repayment increases.

2. a)

Money owed at the start of year 2		£49,316.16
Interest on amount owed at 8%	8% of £49,316.16	£3,945.29
Total owed	£49316.16 + £3,945.29	£53,261.45
Total payments made by the family	12 x £390.32	£4,683.84
Money owed at end of year 2	£53,261.45 - £4,683.84	£48,577.61

    b) £48,577.61   c) £738.55.

    d) It is more than Year 1 because there was less interest to pay.

3.

Money owed at the start of year 3		£48,577.61
Interest on amount owed at 8%	8% of £48,577.61	£3,886.21
Total owed	£48,577.61 + £3,886.21	£52,463.82
Total payments made by the family	12 x £390.32	£4,683.84
Money owed at end of year 3	£52,463.82 - £4,683.84	£47,779.98

Money owed at the start of Year 4		£47,779.98
Interest on amount owed at 8%	8% of £47,779.98	£3,822.40
Total owed	£47,779.98 + £3,822./40	£51,602.38
Total payments made by the family	12 x £390.32	£4,683.84
Money owed at end of Year 4	£51,602.38 - £4,683.84	£46,918.54

    a) £47,779.98.   b) £46,918.54.
    c) £797.63.   d) £861.44.

4. The amount owed at the end of each year over the 25 years is as follows:
    yr1-£49316.16; yr2-£48577.61; yr3-£47779.98; yr4-£46918.54; yr5-£45988.18; yr6-£44983.40;
    yr7-£43898.23; yr8-£42726.25; yr9-£41460.51; yr10-£40093.51; yr11-£38617.15; yr12-£37022.68;
    yr13-£35300.66; yr14-£33440.87; yr15-£31432.20; yr16-£29263.04; yr17-£26920.25; yr18-£24390.03;
    yr19-£21657.39; yr20-£18706.14; yr21-£15518.79; yr22-£12076.45; yr23-£8358.73; yr24-£4343.59;
    yr25-£7.23.
    a) If the interest rate is lowered then the length of time for the mortgage decreases or (more usually) the
        monthly payment is reduced.
    b) If the interest is raised then the length of time is extended or (more usually) the monthly payment is
        increased.

5. The risks include not being able to keep up the payments:
   ◆ if interest rates increase significantly;
   ◆ if income decreases through sickness, redundancy or change of job;
   ◆ if expenditure increases significantly through children, household goods.

Task 4:

1. a) £122.99.   b) £6.15.
2. a) £110.45.   b) £5.52.

3.

Date	Reference	Description	Amount
		Balance from previous statement	£110.45
		Interest of 2% on £110.45	£2.21
3 April		Amount owed	£112.66
		Payment received	£5.52
		New balance	£107.14
		Minimum payment due by 4 May	£5.36

4. a) Advantages: No need to carry cash, payment put off until end of month.
   b) Disadvantages: High interest rates, temptation to buy more than you can afford.

Task 5:

1. £5.
2. £30.
3. a) £6.
   b) £36.
4. a) £43.20.
   b) 4 weeks, £51.84 owed.
5. b) 8 weeks, £107.50 owed.
   c) 21 weeks, £1150.13 owed.
6. a) Answers might include wanting to pay off other debts or not being able to get credit on something you really want to buy.
   b) Answers might include the shock of how quickly the debt has increased.

Task 3:
Question 2

Year 2

Money owed at the start of year 2		£49,316.16
Interest on amount owed at 8%	8% of £49,316.16	
Total owed	£49,316.16 +	
Total payments made by the family	12 x £390.32	£4,683.84
Money owed at end of year 2	- £4,683.84	

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Question 3

Year 3

Money owed at the start of year 3		
Interest on amount owed at 8%	8% of	
Total owed		
Total payments made by the family	12 x £390.32	
Money owed at end of year 3		

Year 4

Money owed at the start of year 4		
Interest on amount owed at 8%		
Total owed		
Total payments made by the family		
Money owed at end of year 4		

- - - - - ✂ -

Task 4:
Question 3

Date	Reference	Description	Amount
		Balance from previous statement Interest of 2% on	
30 Mar		Amount owed Payment received	
		New balance	
		Minimum payment due by 3 May	

But can you afford it?

UNIT 14

There are many occasions when you have to make difficult decisions about how to use your money. This unit looks at five sorts of situations which you might face at some time. In each case you will be considering "But can I afford it?"

"Hello John, got a new motor?"

When making decisions about using your money, it is a good idea to know what your income and expenditure is likely to be. In this first task, you have to advise John on how to organise his weekly budget.

1

John earns £250 per week.
His outgoings (what he spends his money on) are, on average, as follows:

Accommodation	£60
Bills (telephone, gas, electricity)	£40
Council tax	£10
Food	£35
Essentials (clothes, etc.)	£15
Luxuries (outings, drinks etc.)	£15
Saving for holidays	£10
Transport to get to work by bus	£20
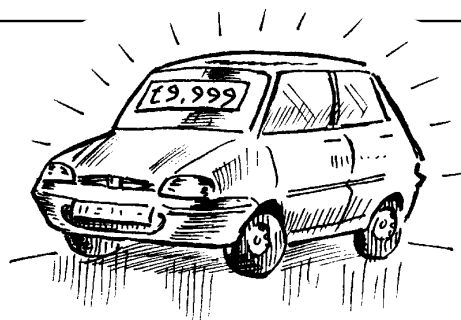
1. How much money does John have left each week?

2. John does some research into buying a car. He estimates that the running costs per week would be as follows:

Insurance	£5.00
Tax	£2.50
Petrol	£10.00
6 monthly service	£5.00

   How much will it cost him to run his car per week on the basis of these figures?

3. If he decides to buy the car, how much money will he now have left each week? (Remember, he no longer needs to spend any money on public transport.)

4. In order to do this he needs to buy the car. He has found one that he can buy, but will have to pay instalments on the purchase of the car of £40 per week. Can he afford this?

1

Task 1 continued
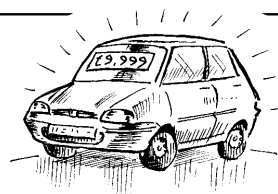
5. Suppose now that he has an accident and the bill for repairs will cost £100. He has a choice:

Option 1:   He can pay the full £100 himself.
Option 2:   He can pay the first £50 himself but could claim the other £50 from the insurance company. If he does this then his insurance payments will go up to £7.00 per week.

a) What should he do? Write down in detail which choice you think he should make and why.
b) Give details of any adjustments you would suggest he makes to his weekly budget.

Do you know how much you spend on different things each week?

"Better drum up some money, then"

These days, not only do you have to consider whether you are going to buy something, but also how you are going to pay for it. In this second task, you have to help Clare decide how to pay for her drums.

2

Clare's band are starting to get gigs and she wants to get her own drum kit. She has seen one in a music shop for £450.
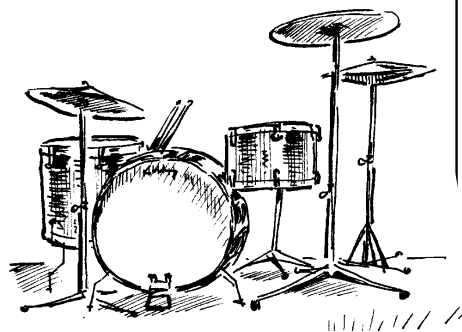
1. Clare thinks she can save about £50 per month. How many months would she need to save in order to have enough money to buy the kit?

2. Clare finds out that the shop offers different payment options. In each case she could have the kit more quickly than if she saved up for the whole amount.

Option A: Pay a deposit of £100 and then pay £30 per month for 12 months with the first instalment one month after the deposit.
Option B: Pay no deposit, take the kit immediately and pay £40 per month for 12 months with the first instalment one month after taking the kit.
Option C: Pay no deposit, take the kit immediately and pay £90 per month for 6 months with the first instalment six months after taking the kit.

a) How much does Option A cost in total? How long would she have to wait before she could afford this option?
b) How much does Option B cost in total?
c) How much does Option C cost in total?

2

Task 2 continued
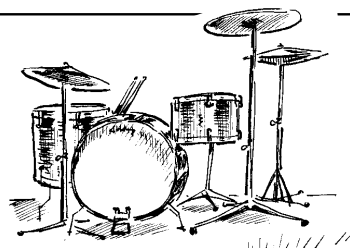
3. Will Clare be able to keep up the payments on option C?

4. What is the minimum that Clare would have to save each month if she were to pay by Option C?

5. Imagine Clare has a crisis in months 6 and 7 and does not save anything in either month.
   a) Would she be able to keep up the payments for Option A?
   b) Would she be able to keep up the payments for Option B?
   c) Would she be able to keep up the payments for Option C?
   d) What effect would the crisis have on the saving method of question 1?

6. a) What kind of circumstances might occur to prevent Clare saving for two months?
   b) Explain which of the four methods of payment you would advise her to use and why.

7. The three options offered by the shop involve a risk because Clare is promising to pay money which she expects to have but cannot be certain of having.
   a) What are the chances of not having it?
   b) What risks would you be prepared to take if you were in her place?

> Do you prefer to buy now and pay later or save up and then buy?

"There's no place like home"

One of the biggest decisions you may ever make is whether to buy a house. Almost everyone does this by taking out a mortgage with a building society or bank. One type of mortgage is known as a Repayment Mortgage. This allows you to pay back the money you owe over a long period of time by paying a fixed amount each month. Each year the money you give the building society goes partly towards the interest on what you owe and partly towards repaying some of the mortgage. In this next task you will help the Walker family with their mortgage decisions.

3

Mr and Mrs Walker have seen a house for £50,000 that they would like to buy. They will need a 100% mortgage – this means that they would borrow all of the £50,000. They also decide that they want a 25-year mortgage – this means they would pay the money back over 25 years. At the time of the purchase the interest rate is 8% p.a. and the building society calculates that this requires a monthly payment of £390.32. The table shows how the first year would work out.

Money owed at the start of year 1		£50,000.00
Interest on amount owed at 8%	8% of 50000	£4,000.00
Total owed	£50,000 + £4,000	£54,000
Total payments made by the family	12 x £390.32	£4,683.84
Money owed at end of year 1	£54,000.00 – £4,683.84	£49,316.16

Amount of mortgage repaid = £50,000 - £49,316.16 = £683.84

3

Task 3 continued
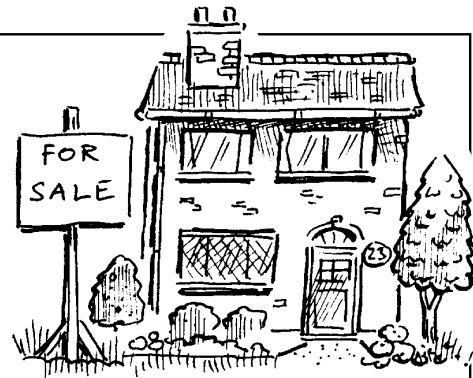
1. The amount of mortgage paid back is £683.84. Is this more or less than 1/25 of the £50,000 that the Walkers owe the building society?. Explain why, in spite of this, the debt would be paid off in 25 years.

2. a) Now copy the table for year 2.

Money owed at the start of year 2		£49,316.16
Interest on amount owed at 8%	8% of £49,316.16	
Total owed		
Total payments made by the family	12 x £390.32	
Money owed at end of year 2		

b) By filling in the gaps, work out how much is owed at the end of year 2.
c) Work out the amount of mortgage repaid during year 2.
d) What do you notice about the amount of mortgage repaid that year? How do you explain it?

3. Now do the calculations for years 3 and 4 by constructing a table for each year.
a) How much is owed at the end of year 3?
b) How much is owed at the end of year 4?
c) How much of the mortgage was repaid in year 3?
d) How much of the mortgage was repaid in year 4?

4. The sum of £390.32 per month is calculated so that the total debt is paid off in 25 years, assuming the interest rate does not change. (You could check to see if it really does work out over the 25 years!)
a) What do you think happens if the interest rate is lowered?
b) What do you think happens if it is raised?

5. The Walker family takes on this mortgage because they feel that they can afford to pay the £390.32 per month. What are the possible risks of doing this?

> What hopes do you have for a home in the future?
> Do you expect to buy a house one day?

"Paul and his plastic friend"

One way many people pay for goods is with a credit card. All you have to do in the shop is sign a receipt, which is then sent to the central office of the credit card company. All transactions are added up and at the end of the month you receive a statement. You must then decide how much to pay. (Some shops also have their own store cards which operate in a similar way to credit cards.) In this next task you will help Paul with his credit card decisions.
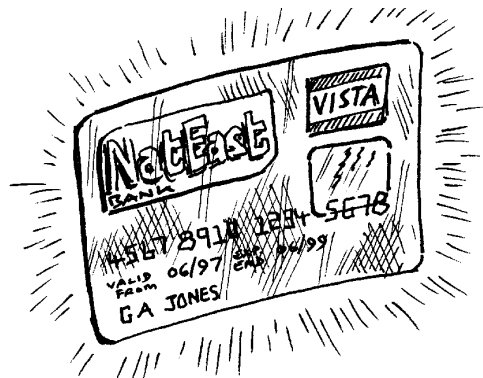
4

1. Paul's statement for February has only three items.

Date	Reference	Description	Amount
16Feb.	8JZYRE9	Longmoor Rd Service St.	24.99
19Feb	B2ERTF7	Helen Hotel, Matlock	54.40
20Feb	3WDBJI6	British Rail, Manchester	43.60
		Total	
		Minimum payment to arrive by 4 Mar	

a) What is the total he owes the credit card company?
b) Work out 5% of the total.
c) Paul must pay a minimum payment of either £5 or 5% of the bill, whichever is the larger. How much will Paul have to pay?

2. If Paul pays his statement in full by the date stated he is not charged any interest. However, if the total amount is not paid off, interest of 2% is added to the total. This appears on the following month's statement. Paul's March statement shows that he decided only to pay £15 by the due date and also that he did not use his card in March.

Date	Reference	Description	Amount
		Balance from previous statement	122.99
		Interest of 2% on 122.99	2.46
		Amount owed	125.45
4Mar		Payment received	15.00
		New balance	
		Minimum payment due by 3 Apr	

a) What is the total that Paul now owes the credit card company?
b) What is his minimum payment?

3. If Paul just pays the minimum in March and does not use his credit card in April, what will his April statement look like?

4. The rate of interest (2% per month), if worked out for the whole year, would be very much higher than the borrowing rate from the bank.
a) What are the advantages of credit cards?
b) What are the disadvantages or risks of using a credit card?

5. What advice would you give Paul when he comes to pay his April statement?

Have you ever been in debt to someone?

"Lend us some dosh, mate"

Sometimes people get into situations where they are desperate for money. It is at times like this that they may go to a money lender. Some money lenders charge very high interest rates and it is easy for the debt to build up. In this task you will see the difficulty that Andy can get into quite quickly.

5

Andy needs £25 and decides to borrow from a money lender. The conditions are:

◆ everything must be repaid within six months;

◆ he can pay back what he owes at any time within that period;

◆ interest will be added to the total he owes on a weekly basis;

◆ interest will first be charged one week after he borrows the money;

◆ the interest is charged at 20% per week on anything that is owed.

1. What is 20% of £25?

2. How much does he owe at the end of the first week if he can not pay anything back, including the interest?

3. In later weeks, if he has not paid anything back, he is also charged 20% interest on the interest he owes.
   a) How much interest is charged in week 2?
   b) How much does he owe at the end of week 2?

4. Paul is unable to pay anything back in the next few weeks as well.
   a) How much does he owe at the end of week 3?
   b) Find how many weeks elapse before the amount owed is doubled (£50).

5. A quick way to calculate how much is owed at the end of each week is to multiply the previous week's debt by 1.2.
   a) Explain why this works.
   b) Find how many weeks elapse before the sum owed is £100.
   c) Find how many weeks elapse before the sum owed is £1000.

6. a) Write down some situations in which you might be tempted to borrow £25 at a weekly interest rate of 20%.
   b) How would you feel if you had borrowed £25 without being able to pay it back and found yourself owing £1000.

Imagine you lent a friend some money to buy lunch and he said he would pay you back the next day.

How would you feel if he did not pay you back?

Would you borrow money when there is a possibility that you cannot pay it back?