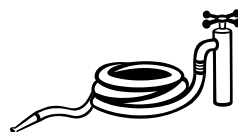


WATER BILL DATA SHEET

MR B COZIE
54 SNUG LANE
WARMINGTON

SB24 3HP



**West
Water**

Your water and wastewater bill

Payment by instalments

Date

2 February 1999

For enquiries ring

0131 657 453

Customer Reference number

35-239-02-046-254

You can call us about your bill Mon – Fri, 7 am – 10 pm.

CHARGES FOR PERIOD 1/04/99 TO 31/03/99

	RATEABLE VALUE		PENCE PER £	CHARGE
WATER STANDING CHARGE				£32.00
WATER	£392.00	x	40.00	£156.80
SEWERAGE	£392.00	x	76.50	£299.88
AMOUNT PAYABLE BY 4 INSTALMENTS				£488.68
FIRST INSTALMENT				£122.17
EFFICIENCY REBATE CREDIT				£6.50
PAYMENT DUE ON OR BEFORE 1ST APRIL				£115.67

An account for the second instalment of £122.17 (due 1st July) will be sent to you in June.

How to pay

- Direct Debit** If you have a bank or building society account Direct Debit is the easiest, safest and most convenient way to pay. To find out more, ring the number given above.
- Bank** Fill in the payment slip below and take it with your payment to your bank.
- Post Office** You can pay by cash, water savings stamps or by cheque (made payable to 'Post Office Counters Ltd').
- Post** Fill in the payment slip and send it with a cheque made payable to 'West Water Ltd' to PO Box 320, Warmington SB7 3PQ.



Payment Slip

Please fill in details from your cheque card before sending by post.

Name	Address	Customer Ref No	Amount Due
MR B COZIE	54 SNUG LANE WARMINGTON SB24 3HP	35-239-02-046-254	£115.67
Cheque Card Number		Expiry Date	



ELECTRICITY BILL DATA SHEET**ELECTRICITY**

from WESTWEB



Mr. B Cozie
54 Snug Lane
Warmington

SB24 3HP

ELECTRICITY BILL

Thank you for using our service.

Your bill is now due for payment.

If you have any queries, or need help,

please phone us free on

0800 023415

quoting your customer number

640 0300 254

Domestic Household Tariff

Meter Readings (E = Estimate C = Your own)

This Time	Last Time	Units Used	Tariff	Pence per unit	Amount £
97744 E	97304	440	D13	6.41	£28.20
Standing Charge				84 days at 9.4	£7.90
Total charges this quarter excluding VAT					£36.10
VAT at 5.0% on				£36.10	£1.81
Total charges this quarter including VAT					£37.91
					Total now due
Period ended 30-Nov		Date of Issue		02-Dec	

This bill is estimated. If you want to tell us your meter reading(s), please phone our 24 hour automatic meter reading service free on 0800 023415. Thanks for your help.

We aim to give you the best possible service. If you need advice please phone our Helpline free on 0800 023415. We are sure we can sort out any problem to your satisfaction.

If you are not satisfied, you can ask the Office of Electricity Regulation (OFFER) to help you. OFFER is an independent body set up by Parliament to protect your interests.

Moving House?

If you are moving house, please tell us at least two working days before you move so we can arrange to get a meter reading.



GAS BILL DATA SHEET

MR B COZIE
54 SNUG LANE
WARMINGTON

SB24 3HP

Gas UK



Heat in your home

Bill Date: 25 November

Customer Reference Number: 200 134

Keeping Prices Low

By paying your quarterly bill **within 10 days** of the bill date you will receive a **prompt payment reduction** of **£7.50** off your next gas bill.

Carbon Monoxide

Government Consumer Safety Warning. Carbon Monoxide can kill. Get your appliances checked every year. Keep your family safe.

Estimated Readings (E)

If your reading has been estimated and you would prefer us to use your own reading, please ring our automated service (local call rates). You will be asked for your customer reference number and your current meter reading. The service will tell you how much your new bill will be. Your new bill will be received within 7 days.

Gas Bill

Standing Charge Rate	13.390 pence/day
Gas Charge Rate	1.413 pence/kWh
Present Reading	6731
Previous Reading	6590
Gas Used (units)	141 units
Gas Used (m ³)	399.03 m ³
Gas Used (kWh)	4432 kWh
Cost of Gas used	£62.62
No of Days	84 days
Cost of Standing Charge	£11.25
Prompt Payment Reduction	7.50
Sub Total excluding VAT	£66.37
VAT at 5%	£3.32
Total Charges	£69.69

Understanding 'gas used'

To work out the amount of gas you have been charged for:

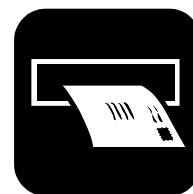
- Take the previous meter reading from the present reading.
- Multiply the answer by 2.83 to give the number of cubic metres of gas supplied.
- Multiply the answer by the Volume Conversion Factor, 1.022640 and then by the calorific value, 39.1 MJ/m³.
- Divide the answer by 3.6 to give the number of kilowatt hours (kWh).
- This number is multiplied by the price per kilowatt hour to give the gas charge.



Bills, Bills, Bills!



Bills, Bills, Bills!



Exercise

Section A

You need the water, electricity and gas bill data sheets.

1. Water Bill

There are three types of charge:

- standing charge
- water charge
- sewerage charge.

The water and sewerage charges depend on the rateable value of the house. Show how the total annual charge of £488.68 and the first instalment of £115.67 have been calculated.

2. Electricity Bill

Show all the calculations that give the total bill of £37.91.

3. Gas Bill

Show all the calculations that give the total bill of £69.69.

Section B

You need the Excel spreadsheet, Bills.xls.



4. Water Bill

- (a) The values in the yellow cells E4, E5, E6, F7 and F9 have been calculated using spreadsheet formulae. Find and write down each of these formulae.
- (b) The spreadsheet calculates the charges for a house whose rateable value is £392. Change the rateable value to £250 in both blue cells and print out the new bill.
- (c) Check by hand all of the values given on the new bill.

5. Electricity Bill

- (a) The blue cells, A5 and B5 show that the present meter reading is an estimate. Mr Cozie decides to contact Westweb to give them the true reading of 97698.
 - (i) Replace the estimated reading by the true reading and print out the resulting bill.
 - (ii) By comparing the total amount due on the old and new bills, find how much Mr Cozie will save by ringing up Westweb.
 - (iii) Check your answer to part (ii) by comparing the number of units used on the old and new bills. (Don't forget the extra VAT.)



- (b) Westweb announce that next quarter they will be increasing the price per unit to 6.6 pence and reducing the daily standing charge to 9.2 pence. Mr Cozie decides to calculate what difference this will make, assuming he uses the same amount of electricity and the number of days is the same.
- (i) Change the entries in the yellow cells, F5 and F7, to show the new prices and print out the resulting bill.
- (ii) Compare the total amounts on the bills you produced for parts (a)(i) and (b)(i). How much more or less will Mr. Cozie have to pay for the same amount of electricity?
- (iii) Check your answer to part (b)(ii) by an alternative method.
- (c) The values in the green cells D5, H5, H7, H9, H10 and H11 have been calculated using spreadsheet formulae. Find and write down each of the formulae.

6. Gas Bill

Before the next bill arrives in the spring Mr Cozie decides to try to work out the cost himself. His new reading is 6928, and the previous reading was 6731. The prices have increased to 13.415 pence per day standing charge and 1.424 pence per kilowatt hour. There were 92 days in the quarter.

- (a) (i) Use the method given in the box at the bottom of the gas bill data sheet to work out the cost of the gas used.
- (ii) Calculate the standing charge for the quarter.
- (iii) Find the total charge including VAT, assuming that Mr Cozie will pay early enough to qualify for the Prompt Payment Reduction.
- (b) Alter the entries in the blue cells, B3, B4, B6, B7 and B13 on the Gas Bill spreadsheet to show the values given above. Print out the new bill and compare the values given in other cells with your calculations.

Section C

7. Write a brief summary of the similarities and differences between the water, gas and electricity bills.



Bills, Bills, Bills!



Assignment

To complete this assignment you will need copies of two different bills or invoices for different goods or services.

Possibilities include:

- water, gas or electricity bills
- phone bill
- bill for purchase and delivery of a large item such as a television or carpet
- invoice from a mail order firm eg clothing, CDs, Christmas goods
- invoice for a repair eg to a car or household appliance
- invoice for building work eg house extension, laying a drive, new kitchen

Each bill or invoice should have at least three different elements for which charges have been made (eg. labour, parts, postage and packing, standing charge).
At least one of your bills or invoices should include VAT.

1. For each bill write out in full the calculations which have been carried out to arrive at the final amount charged.
2. For one bill or invoice draw up a spreadsheet and use it to check your calculations.
3. Write a brief summary of the similarities and differences between the two bills.



Sample Examination Questions

Section A

Use the Water Bill Data Sheet

The table below shows the part of the water bill for the following year after some price rises.

	RATEABLE VALUE		PENCE PER £	CHARGE
WATER STANDING CHARGE				£36.00
WATER	£392.00	x	42.00	
SEWERAGE	£392.00	x		£305.76
AMOUNT PAYABLE BY 4 INSTALMENTS				
FIRST INSTALMENT				£126.60
EFFICIENCY REBATE CREDIT				
PAYMENT DUE ON OR BEFORE 1ST APRIL				£119.85

1

a By how much has the water standing charge increased?

b Calculate

(i) the water charge for the year

(ii) the charge for sewerage in pence per £ of rateable value

(iii) the total amount payable by four instalments

(iv) the efficiency rebate credit



Section B**Use the Electricity Bill Data Sheet**

2 Mr Cozie's original bill was estimated.

He contacts Westweb to give them his correct meter reading of 97683.

Complete the shaded boxes below to show the values which will appear on the new bill.

Domestic Household Tariff					
Meter Readings (E = Estimate C = Your own)					
This Time	Last Time	Units Used	Tariff	Pence per unit	Amount £
	97304		D13	6.41	
Standing Charge		84 days at		9.4	£7.90
Total charges this quarter excluding VAT					
VAT at 5.0% on					
Total charges this quarter including VAT					
					Total now due
Period ended 30-Nov		Date of Issue		10-Dec	



Section C**Use the Gas Bill Data Sheet**

3 The spreadsheet below shows the charges on the gas bill

	A	B	C
1	Gas Bill		
2			
3	Standing Charge Rate	13.390	pence/day
4	Gas Charge Rate	1.413	pence/kWh
5			
6	Present Reading	6731	
7	Previous Reading	6590	
8	Gas Used (units)	141	units
9	Gas Used (m ³)	399.03	m ³
10	Gas Used (kWh)	4432	kWh
11	Cost of Gas used	£62.62	
12			
13	No of Days	84	days
14	Cost of Standing Charge	£11.25	
15			
16	Prompt Payment Reduction	7.50	
17			
18	Sub Total excluding VAT	£66.37	
19	VAT at 5%	£3.32	
20	Total Charges	£69.69	

a Which of these formulae could go in cell B18 to find the Sub Total excluding VAT?
Tick any that are correct.

(i) =B11+B14

☐

(ii) =B4*B10+B3*B13

☐

(iii) =B11+B14-B16

☐

(iv) = B4*B10+B3*B13-B16

☐

b Give a formula that could go in cell B20 to find the Total Charges.



Bills, Bills, Bills***Teacher Notes******Which Free-Standing Unit does this support?***

Foundation Level - Managing Money

Evidence for Coursework Portfolio

The assignment can be used to satisfy the requirement to explain the calculations involved in bills and invoices.

What students need to know

- How to calculate with money
- How to check calculations
- How to work out percentages (in particular VAT)
- How to use spreadsheets

General Notes and Suggestions

The Bills package includes Water, Electricity and Gas Data Sheets (pages 1 – 3), a discussion sheet (page 4), an exercise based on the data sheets (pages 5 - 6), an assignment (page 7) and some sample examination questions (pages 8 – 10) based on the data sheets. There are a variety of ways in which these can be used.

The discussion sheet and/or the data sheets could be used to introduce the topic. Note that the water bill involves rateable values. These are still used by water companies in some areas. If possible, compare bills from different companies.

The exercise requires use of the data sheets and the Excel file, Bills.xls. It is designed to give students practice in explaining bills, checking calculations and using spreadsheets. Students need to be familiar with terms such as standing charge before they begin.

The assignment is open-ended, requiring students to provide their own bills and invoices.

The sample examination questions, based on the same data sheets, can be used for practice.



Answers to Exercise**Section B**

4. (a) $E4 = B4 \times D4 / 100$ $E5 = B5 \times D5 / 100$ $E6 = E3 + E4 + E5$
 $F7 = E6 / 4$ $F9 = F7 - F8$

(b)

CHARGES FOR PERIOD 1/04 TO 31/03			
	RATEABLE VALUE	PENCE PER £	CHARGE
WATER STANDING CHARGE			£32.00
WATER	£250.00	x 40.00	£100.00
SEWERAGE	£250.00	x 76.50	£191.25
AMOUNT PAYABLE BY 4 INSTALMENTS			£323.25
FIRST INSTALMENT			£80.81
EFFICIENCY REBATE CREDIT			£6.50
PAYMENT DUE ON OR BEFORE 1ST APRIL			£74.31

5. (a)(i)

Domestic Household Tariff					
Meter Readings (E = Estimate C = Your own)					
This Time	Last Time	Units Used	Tariff	Pence per unit	Amount £
97698	97304	394	D13	6.41	£25.26
Standing Charge					£7.90
84 days at					£9.4
Total charges this quarter excluding VAT					£33.15
VAT at 5.0% on					£1.66
Total charges this quarter including VAT					£34.81
Total now due					
Period ended 30-Nov Date of Issue 02-Dec					

(ii) £3.10

(b)(i)

Domestic Household Tariff					
Meter Readings (E = Estimate C = Your own)					
This Time	Last Time	Units Used	Tariff	Pence per unit	Amount £
97698	97304	394	D13	6.6	£26.00
Standing Charge					£7.73
84 days at					£9.2
Total charges this quarter excluding VAT					£33.73
VAT at 5.0% on					£1.69
Total charges this quarter including VAT					£35.42
Total now due					
Period ended 30-Nov Date of Issue 02-Dec					

(ii) £0.61 extra



$$\begin{array}{lll} \text{(c)} & D5 = A5 - C5 & H5 = D5 * F5 / 100 & H7 = D7 * F7 / 100 \\ & H9 = H5 + H7 & H10 = 0.05 * F10 & H11 = H9 + H10 \end{array}$$

6. (a)(i) £88.18 (ii) £12.34 (iii) £97.67
(b)

Gas Bill	
Standing Charge Rate	13.415 pence/day
Gas Charge Rate	1.424 pence/kWh
Present Reading	6928
Previous Reading	6731
Gas Used (units)	197 units
Gas Used (m ³)	557.51 m ³
Gas Used (kWh)	6192 kWh
Cost of Gas used	£88.18
No of Days	92 days
Cost of Standing Charge	£12.34
Prompt Payment Reduction	7.50
Sub Total excluding VAT	£93.02
VAT at 5%	£4.65
Total Charges	£97.67

(N.B. Minor differences between student calculations and the bills may arise due to rounding.)

Answers to Sample Questions

- 1 a £4
b (i) £164.64 (ii) 78.00 pence per £ of rateable value
(iii) £506.40 (iv) £6.75

2

Domestic Household Tariff						
Meter Readings (E = Estimate C = Your own)						
This Time	Last Time	Units Used	Tariff	Pence per unit	Amount £	
97683	97304	379	D13	6.41	£24.29	
Standing Charge		84 days at		9.4	£7.90	
Total charges this quarter excluding VAT					£32.19	
VAT at 5.0% on				£32.19	£1.61	
Total charges this quarter including VAT					£33.80	
Total now due						
Period ended	30-Nov	Date of Issue	10-Dec			

- 3 a (iii) b = B18 + B19 (or correct alternative eg = 1.05 * B18)

