GCSE Mathematics
Intermediate Tier

Booklet 10

Household Bills & Exchange Rates

Student's Name	
Lecturer's Name	
Mark	/
Student Reflection	☺ 😐 ☹

Make sure you show your methods and calculations.

Calculators are / are not to be used on this booklet.

Number
Household Bills

These are large questions where you can get a good mark if you do the question step by step.

Number
Household Gas Bill

Example

Present meter reading	16095
Previous meter reading	15476
Conversion factor	1.02264
Calorific value	39.30316

Number
Household Gas Bill

The cost of gas is calculated as follows

1. Find the number of units used
2. Multiply your answer by the Conversion factor
3. Multiply your answer by the Calorific value
4. Divide your answer by 3.6 and round down to the whole number

This gives the number of gas units used in kilowatt hours

Number
Household Gas Bill

The charge is 2.559p for each of the first 1177 gas units

used and 2.83p for each remaining gas units

Number
Household Gas Bill

The first thing to do is to calculate the difference in the meter readings

1 Find the number of units used

Present meter reading	16095
Previous meter reading	15476
	619

Number
Household Gas Bill

2. Multiply your answer by the Conversion factor
   619 x 1.02264 = 633.01416
3. Multiply your answer by the Calorific value

   633.01416 x 39.30316 = 24879.45681
4. Divide your answer by 3.6 and round down to the whole number

   24879.45681÷ 3.6= 6910.960226

   you need to round down therefore 6910
   is the number of units used

Number

Household Gas Bill

You pay two different rates 1st 1177 is at 3.559p

The rest you pay 2.83p

6910-1177 = 5733 You pay 2.83p

Charge = 3.559 x 1177 = 4188.943p

Charge = 2.83 x 5733 = 16224.39p

TOTAL = 4188.943p + 16224.39p

Number

Household Gas Bill

TOTAL = 4188.943p + 16224.39p

= 20413.333p (this is in Pence)

= 20413.333 ÷ 100 = £ 204.13

Most household bills will be between £100 and £400

Number

Household Electricity Bill

Example

Present meter reading 70163

Previous meter reading 67789

Charge per unit 9.45 pence per unit

Service Charge £13.04

V.A.T 5%

Find the total cost including V.A.T

Number

Household Electricity Bill

1 We find the units used

Present meter reading 70163
Previous meter reading 67789
2374

2 Find the cost of units used
Cost of units = 2374 x 9.45 pence per unit

= 22434 pence

Number

Household Electricity Bill

Cost of units = 22434 pence

3 Find cost in pounds

Divide by 100 to give cost in pounds

= 22434p ÷ 100 = £224.34

4 Then add the service charge

= £224.34 + £13.04 = £237.38

Number

Household Electricity Bill

Example

5 Find the V.A.T

$= £237.38 \times \frac{5}{100} = £11.87$

6 Finally add the V.A.T to the cost

= £237.38 + £11.87 = £249.25
Answer = £249.25

1. (a) Mr and Mrs Young get their electricity bill for the 3 month period August – October. The details of the bill are as follows:

Previous meter reading	32881	Present meter reading	35520
Charge per unit	7.08 pence	Quarterly standing charge	£10.72

Calculate the total cost of the electricity bill, **showing all your working.**

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(b) VAT is charged at 20%. What is the cost of the electricity bill including VAT ?

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2. (a) Tina went on a holiday to America. She changed £900 into dollars, when the exchange rate was £1 : $1.49. How many dollars did she get ?

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(b) At the end of her holiday, Tina had $31 left. She changed them back into pounds, when the exchange rate was £1 : $1.55. How much did Tina get, to the nearest penny ?

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3. (a) Rhian get her electricity bill for the 3 month period July – September.
The details of the bill are as follows:

Previous meter reading	46583	Present meter reading	49468
Charge per unit	6.65 pence	Quarterly standing charge	£12.56

Calculate the total cost of the electricity bill, **showing all your working.**

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(b) VAT is charged at 20%. What is the cost of the electricity bill including VAT ?

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4. A magazine is published every month and costs £2.99 per issue.
If you pay in advance, you can get the magazine for three months for a cost of £5.49.
How much money would be saved, in a year, by paying for the magazine in advance every three months rather than buying a copy every month ?

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5. The Williams family go on holiday to Menorca, when the exchange rate is £1 : 1.12 Euros.

(a) They exchange £350 into Euros. How many Euros do they get ?

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(b) Whilst on holiday they bought 30 postcards at 85 cents each, and stamps for the postcards at 70 cents for each postcard. How much, in pounds correct to the nearest penny, did it cost them to buy and post these postcards ?

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6. (a) The details of Huw's gas bill for the period June – August are as follows:

Number of units of gas used	7939	Cost per unit of gas	1.52 pence
Number of days June – August	92	Standing charge per day	10.72 pence

Calculate the total cost of the gas bill, **showing all your working.**

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(b) VAT is charged at 20%. What is the cost of the gas bill including VAT ?

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7. On 1st October, Matthew owes £ 350 on his credit card.

He has to pay at least 10% of the balance on the 10th of each month.

The credit card company adds 2% interest onto what he owes on the 20th of each month.

Matthew doesn't spend any more money on his card, and makes the minimum payment every month.

Complete the account statement below to find the balance on the account on 30th November.

Date	Item	Amount	Balance
1st October	Loan taken out		£ 350.00
10th October	Payment made		
20th October	Interest charged		
10th November	Payment made		
20th November	Interest charged		
30th November			

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8. Susan went on holiday to Norway, when the exchange rate is £1 : 8.34 kroner.

(a) She exchanged £500 into kroner. How many kroner does she get ?

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(b) Whilst on holiday Susan spent 3220 kroner. She changed her remaining kroner into pounds, when the exchange rate was £1 : 8.39 kroner. How many pounds did she get ?

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9. Anna hires a car for a number of days. The hire charges are:

£36.00 for the first day,
£30.75 for each additional day.

When she returned the car to the hire company, her total bill was £405.
For how many days did Anna hire the car ?
You must show all your working.

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10. (a) Mr and Mrs Donovan get their quarterly electricity bill.
The details of the bill are as follows:

Present meter reading	54261	Previous meter reading	52815
Charge per unit	7.52 pence	Quarterly standing charge	£9.85

Calculate the total cost of the electricity bill, **showing all your working.**

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(b) VAT is charged at 20%. What is the cost of the electricity bill including VAT ?

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(a) She exchanged £500 into kroner. How many kroner does she get?

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(b) Whilst on holiday Susan spent 3220 kroner. She changed her remaining kroner into pounds, when the exchange rate was £1 : 8.39 kroner. How many pounds did she get?

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£36.00 for the first day

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The details of the bill are as follows:

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