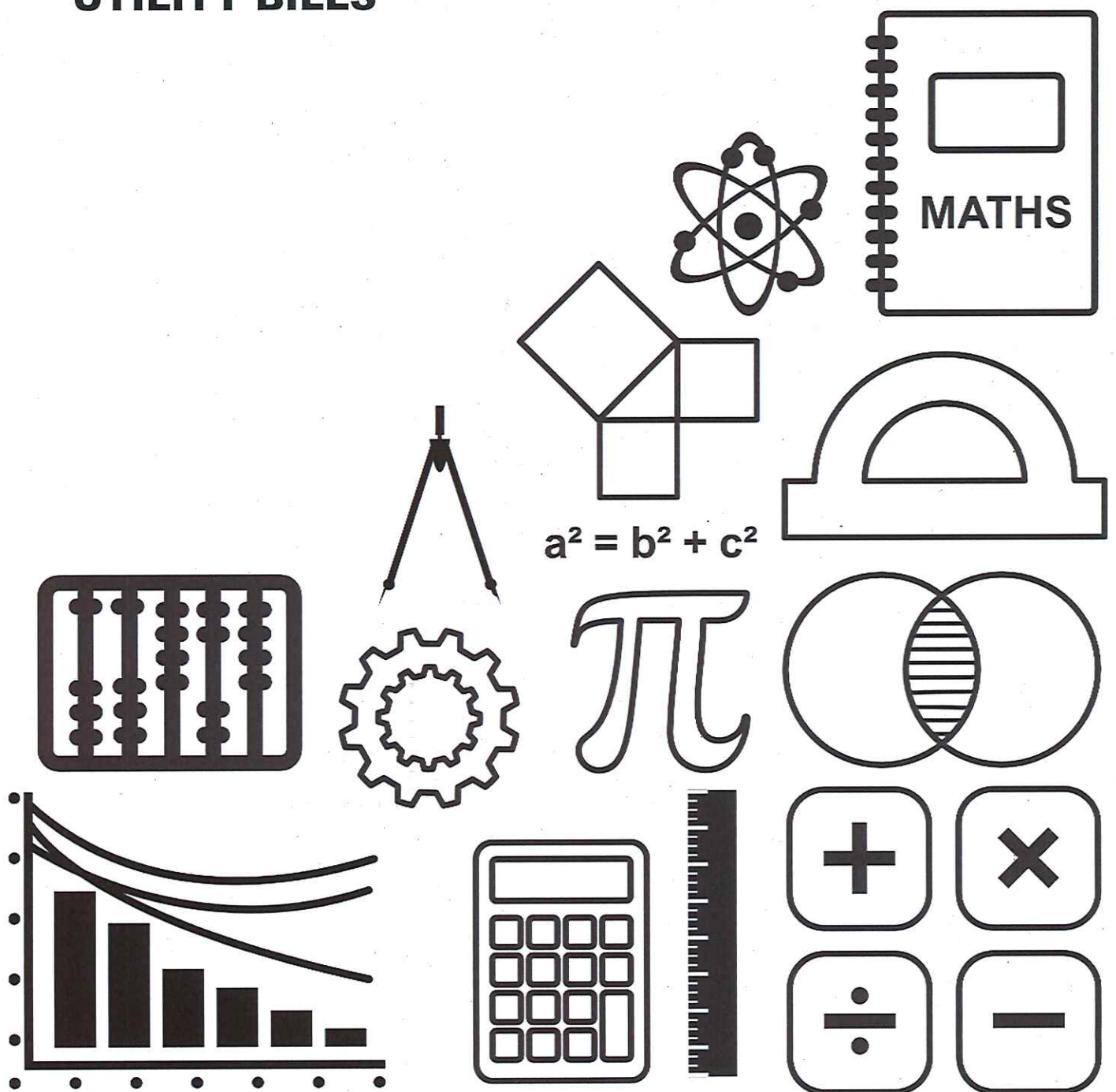


MATHSDIY

GCSE TOPIC BOOKLET UTILITY BILLS

SOLUTIONS



1. Mr and Mrs Brown received their gas bill. The details were as follows:

Present meter reading	86712
Previous meter reading	86315
Charge per unit	6.312 pence per unit
VAT	5%

Showing your working, find the total cost of the gas bill including VAT.

$$\underline{\text{Units used}} = 86712 - 86315 = \underline{397}$$

$$\begin{aligned} \underline{\text{Cost of gas used}} &= 397 \times 6.312 \\ &= 2505.864\text{p} \\ &= \underline{\underline{\pounds 25.05864}} \end{aligned}$$

$$\underline{\text{VAT}} = \frac{5}{100} \times 25.05864 = \underline{\underline{\pounds 1.252932}}$$

$$\begin{aligned} \underline{\text{Total bill}} &= \pounds 25.05864 + \pounds 1.252932 \\ &= \underline{\underline{\pounds 26.31}} \text{ (nearest penny)} \end{aligned}$$

2. Mr and Mrs Davies received their electricity bill. The details were as follows:

Present meter reading	35283
Previous meter reading	33436
Charge per unit	14.08 pence per unit
Service charge	£22.34
VAT	5%

Showing all your workings, find the total cost of the electricity bill including VAT.

$$\text{Units used} = 35283 - 33436 = 1847$$

$$\begin{aligned} \text{Cost of electricity used} &= 14.08 \times 1847 \\ &= 26005.76 \text{ p} \\ &= \text{£}260.0576 \end{aligned}$$

$$\begin{aligned} \text{Add on service charge} &= \text{£}260.0576 + \text{£}22.34 \\ &= \text{£}282.3976 \end{aligned}$$

$$\text{VAT} = \frac{5}{100} \times \text{£}282.3976 = \text{£}14.11988$$

$$\begin{aligned} \text{Total bill} &= \text{£}282.3976 + \text{£}14.11988 \\ &= \text{£}296.52 \text{ (nearest penny)} \end{aligned}$$

3. Ruth gets her electricity bill for the 3 month period July – September. The details are as follows:

Present meter reading	46583
Previous meter reading	45468
Charge per unit	13.65 pence per unit
Service charge	£20.56
VAT	5%

Showing all your workings, find the total cost of the electricity bill including VAT.

$$\underline{\text{Units used}} = 46583 - 45468 = \underline{1115}$$

$$\begin{aligned} \underline{\text{Cost of electricity used}} &= 13.65 \times 1115 \\ &= 15219.75\text{p} \\ &= \underline{\underline{£152.1975}} \end{aligned}$$

$$\begin{aligned} \underline{\text{Add on service charge}} &= £152.1975 + £20.56 \\ &= \underline{\underline{£172.7575}} \end{aligned}$$

$$\underline{\text{VAT}} = \frac{5}{100} \times £172.7575 = \underline{\underline{£8.637875}}$$

$$\begin{aligned} \underline{\text{Total bill}} &= £172.7575 + £8.637875 \\ &= \underline{\underline{£181.40}} \text{ (nearest penny)} \end{aligned}$$

(6)

4. Nia's gas bill for the period April 1st – June 30th is calculated from the following information.

Number of units used	198
Charge per unit	4.38 p
Number of days in this period	91
Service charge per day	13.39p
VAT	5%

Showing all your workings, find the total cost of the gas including VAT.

$$\begin{aligned}\text{Cost of gas used} &= 198 \times 4.38 = 867.24 \text{ p} \\ &= \underline{\underline{£8.6724}}\end{aligned}$$

$$\begin{aligned}\text{Service charge} &= 91 \times 13.39 = 1218.49 \text{ p} \\ &= \underline{\underline{£12.1849}}\end{aligned}$$

$$\begin{aligned}\text{Total charges} &= \underline{\underline{£8.6724}} + \underline{\underline{£12.1849}} \\ &= \underline{\underline{£20.8573}}\end{aligned}$$

$$\text{VAT} = \frac{5}{100} \times \underline{\underline{£20.8573}} = \underline{\underline{£1.042865}}$$

$$\begin{aligned}\text{Total bill} &= \underline{\underline{£20.8573}} + \underline{\underline{£1.042865}} \\ &= \underline{\underline{£21.90}} \quad (\text{nearest penny})\end{aligned}$$

(6)

5. Zahra gets her electricity bill for the 3 month period February – April. The details are as follows:

Present meter reading	35520
Previous meter reading	32881
Charge per unit	14.08 pence per unit
Standing charge	£21.72
VAT	5%

Showing all your workings, find the total cost of the electricity bill including VAT.

$$\underline{\text{Units used}} = 35520 - 32881 = \underline{2639}$$

$$\begin{aligned} \underline{\text{Cost of electricity used}} &= 2639 \times 14.08 \\ &= 37157.12 \text{ p} \\ &= \underline{\underline{£371.5712}} \end{aligned}$$

$$\begin{aligned} \underline{\text{Add on standing charge}} &= £371.5712 + £21.72 \\ &= \underline{\underline{£393.2912}} \end{aligned}$$

$$\underline{\text{VAT}} = \frac{5}{100} \times 393.2912 = \underline{\underline{£19.66456}}$$

$$\begin{aligned} \underline{\text{Total bill}} &= £393.2912 + £19.66456 \\ &= \underline{\underline{£412.96}} \text{ (nearest penny)} \end{aligned}$$

(6)

6. Jay gets his electricity bill. The details are as follows:

Present meter reading	54261
Previous meter reading	52815
Charge per unit	15.38 pence per unit
Standing charge	£11.58
VAT	5%

Showing all your workings, find the total cost of the electricity bill including VAT.

$$\underline{\text{Units used}} = 54261 - 52815 = \underline{1446}$$

$$\begin{aligned} \underline{\text{Cost of electricity used}} &= 1446 \times 15.38 \\ &= 22239.48\text{p} \\ &= \underline{\underline{£222.3948}} \end{aligned}$$

$$\begin{aligned} \underline{\text{Add on standing charge}} &= £222.3948 + £11.58 \\ &= \underline{\underline{£233.9748}} \end{aligned}$$

$$\underline{\text{VAT}} = \frac{5}{100} \times 233.9748 = \underline{\underline{£11.69874}}$$

$$\begin{aligned} \underline{\text{Total bill}} &= £233.9748 + £11.69874 \\ &= \underline{\underline{£245.67}} \quad (\text{nearest penny}) \end{aligned}$$

(6)

7. An electricity bill, for a period of three months, showed that 1380 units had been used at a cost of 12.3 pence per unit.

The standing charge for this period was £13.86.

VAT at 5% is payable on the total cost of the units used and the standing charge.

Calculate the total amount to be paid.

$$\begin{aligned}\text{Cost of electricity used} &= 1380 \times 12.3 \\ &= 16974\text{p} \\ &= \underline{\underline{£169.74}}\end{aligned}$$

$$\begin{aligned}\text{Add on standing charge} &= £169.74 + £13.86 \\ &= \underline{\underline{£183.60}}\end{aligned}$$

$$\text{VAT} = \frac{5}{100} \times 183.60 = \underline{\underline{£9.18}}$$

$$\begin{aligned}\text{Total bill} &= £183.60 + £9.18 \\ &= \underline{\underline{£192.78}}\end{aligned}$$

(6)

8. The company **BluFlame Gaz Co** supplies gas to Mrs Williams.

The company's prices for supplying gas are:

- 5.4 pence per unit of gas used
- 43 pence standing charge per day

During a 90 day period, Mrs William's gas meter readings were:

- 6107 at the beginning of the period, and
- 8449 at the end of the period.

Calculate the **total cost** of the gas used and the standing charge for the 90 day period.

Give your answer in pounds correct to the **nearest penny**.

You must show all of your working.



$$\underline{\text{Units used}} = 8449 - 6107 = \underline{2342}$$

$$\underline{\text{Cost of gas used}} = 2342 \times 5.4\text{p} = 12646.8\text{p}$$

$$(\div 100) = \underline{\pounds 126.47} \text{ (nearest penny)}$$

$$\underline{\text{Standing charge}} = 90 \times 43\text{p} = 3870\text{p}$$

$$(\div 100) = \underline{\pounds 38.70}$$

$$\underline{\text{Total bill}} = \pounds 126.47 + \pounds 38.70$$

$$= \underline{\pounds 165.17} \text{ (nearest penny)}$$

(6)