

Problems Involving Money

Maths

Level 2

Exam-style practice · 12 questions · 35 marks · Calculator allowed

Remember

Wages: gross pay = hours $\times$ rate (overtime often at $1.5 \times$ rate). Net pay = gross – deductions (tax, National Insurance, pension).

VAT at 20%: price $\times 1.2$ to add it; price $\div 1.2$ to remove it. **Profit** = income – costs. **Percentage profit** = profit $\div$ cost $\times 100$.

Deposit and instalments: total = deposit + (monthly payment $\times$ number of months). Compare with the cash price to find the extra cost of credit.

Budgets: add every cost, compare with income, and *state the decision* with the figures that support it.

Section A – Wages and bills

1. Femi is paid £12.40 an hour for a 37-hour week. Overtime is paid at time and a half. Last week he worked 43 hours. What was his gross pay? (3 marks)

2. Femi's deductions were: tax £71.20, National Insurance £38.15, pension 5% of gross pay. What was his net pay? (3 marks)

3. A household's monthly bills: rent £895, council tax £142, energy £128.50, water £36.20, broadband £29.99, phone £18. Take-home pay is £2,150. How much is left each month? (2 marks)

4. An electricity bill charges a standing charge of 52.4p per day plus 27.8p per kWh. In a 91-day quarter a flat used 1,240 kWh. What is the bill? Give your answer to the nearest penny. (3 marks)

Section B – Buying, VAT and credit

5. A laptop is £520 plus VAT at 20%. What is the price including VAT? (1 mark)

6. A builder's invoice is £1,860 including VAT at 20%. How much of that is VAT? (2 marks)

7. A sofa costs £899 cash. On credit: £150 deposit and 18 monthly payments of £48.50. How much more does the credit option cost? (3 marks)

8. A car is advertised at £8,995. The dealer offers £2,300 for a part-exchange, then a 5% discount on the balance. How much does the buyer pay? (3 marks)

9. Tickets to a show cost £24.50 for adults and £16 for children. A booking fee of £2.25 per ticket is added. A family of 2 adults and 3 children books tickets. What is the total cost? (3 marks)

Section C – Profit, budgets and decisions

10. Kemi sells cupcakes at a fair. Ingredients cost £38.60, the stall cost £25 and she sold 96 cupcakes at £1.50. (a) What was her profit? (b) What was her percentage profit on her costs, to the nearest whole number? (4 marks)

11. A school trip costs £1,540 for the coach and £8.50 per pupil for entry. 62 pupils are going. The school charges each pupil £32. Does the school cover its costs? By how much? (4 marks)

12. A gym charges £34 a month, or £340 a year paid upfront, or £4.50 per visit. Tom goes twice a week. Which option is cheapest for him over a year (52 weeks)? Show your working. (4 marks)

Problems Involving Money – Answers

Level 2 · Working shown so you can check your method, not just the final number.

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Section A

- $37 \times 12.40 = £458.80$. Overtime $6 \text{ h} \times 18.60 = £111.60$. Gross = **£570.40**.
- Pension = $0.05 \times 570.40 = £28.52$. Net = $570.40 - 71.20 - 38.15 - 28.52 = £432.53$.
- Bills total £1,249.69. Left = $2,150 - 1,249.69 = £900.31$.
- Standing $91 \times 0.524 = £47.68$. Usage $1,240 \times 0.278 = £344.72$. Total = **£392.40**.

Section B

- $520 \times 1.2 = £624$.
- $1,860 \div 1.2 = £1,550$ before VAT. VAT = **£310**.
- Credit total = $150 + 18 \times 48.50 = 150 + 873 = £1,023$. Extra = $1,023 - 899 = £124$.
- $8,995 - 2,300 = 6,695$. $\times 0.95 = £6,360.25$.
- Tickets: $2 \times 24.50 + 3 \times 16 = 49 + 48 = £97$. Fees: $5 \times 2.25 = £11.25$. Total **£108.25**.

Section C

- (a) Income $96 \times 1.50 = £144$. Costs £63.60. Profit = **£80.40**. (b) $80.40 \div 63.60 \times 100 = 126\%$.
- Costs: $1,540 + 62 \times 8.50 = 1,540 + 527 = £2,067$. Income: $62 \times 32 = £1,984$. **No** – the school is **£83 short**.
- Monthly: $12 \times 34 = £408$. Yearly: £340. Per visit: $104 \times 4.50 = £468$. **The annual payment (£340) is cheapest.**

Where Level 2 students lose marks on this topic

- Paying overtime hours at the normal rate, or paying all 43 hours at time and a half.
- Finding VAT on a price that already includes it by taking 20% of it ($1,860 \times 0.2 = 372$ – wrong). Divide by 1.2 first.
- Doing all the arithmetic correctly and then not answering the question: 'does the school cover its costs?' needs a yes/no and the difference.