Applied Arithmetic

VAT – Profit & Loss

(c) A retailer buys an item for €73. She wants to apply a mark-up of 40% of the cost price of the item. She must then add VAT at 21% to this amount to find the price that she would need to charge the customer.

(i) Find this price, correct to the nearest cent.

The retailer adjusts the price charged to the customer so that it is 1 cent less than a multiple of €10, while keeping the mark-up as close as possible to 40%.

(ii) Using this adjusted price, calculate the actual percentage mark-up achieved, correct to the nearest percent.

(b) Aoife pays a fixed monthly charge of €15 for her mobile phone. This charge includes 100 free text messages and 50 minutes free call time each month. Further call time costs 28 cent per minute and additional text messages cost 11 cent each.
In one month Aoife sends 140 text messages and her call time is 2 hours.

(i) Find the total cost of her fixed charge, text messages and call time.

(ii) VAT is added to this cost at the rate of 21%.
Find the amount paid, including VAT.

Household Bills

(b) The present reading on the electricity meter in John's house is 63792 units. The previous reading was 62942 units.

(i) How many units of electricity were used since the previous reading?

(ii) What is the cost of the electricity used, if electricity costs 9.52 cent per unit?

(iii) A standing charge of €7.00 is added and VAT is then charged on the full amount. If John's total bill is €98.91, calculate the rate at which VAT is charged.

Pay – Income Tax

(b) Barbara works 35 hours a week and she is paid €12·60 per hour.

(i) Find her total weekly pay.

(ii) Barbara pays tax at the rate of 20% on all her income and has weekly tax credits of €53. Calculate her weekly take-home pay.

(iii) In one particular week, Barbara worked 4 additional hours at the same rate of pay. By how much did her take-home pay increase that week?

(c) The standard rate of income tax is 20% and the higher rate is 42%.
Colm has weekly tax credits of €50 and a standard-rate cut-off point of €240.
Until recently, Colm had a gross weekly income of €900.

(i) Calculate the tax Colm paid each week.

(ii) After getting a pay rise, Colm's weekly after-tax income increased by €20.30.
Calculate the increase in Colm's gross weekly income.

(c) The table shows the hours Alan worked over four days.

Day	Thursday	Friday	Saturday	Sunday
Hours worked	9	9	9·5	h

Alan's basic rate of pay is €15·60 per hour.
He is paid one and a half times the basic rate for work on Saturday and Sunday.

(i) Calculate Alan's total pay for Thursday, Friday and Saturday.

(ii) Alan was paid a total of €702 for the four days' work.
Find h, the number of hours Alan worked on Sunday.

(b) The standard rate of income tax is 20% and the higher rate is 42%.
Orla has a gross income of €58 000 for the year and a standard-rate cut-off point of €35 000.

(i) Calculate the amount of tax due at the standard rate.

(ii) Calculate the total amount of gross tax due.

(iii) Orla has tax credits of €3400 for the year.
After tax is paid, what is Orla's income for the year?

Currency Exchange

(b) The cost of staying for three nights in a hotel in England is £231 sterling.

(i) Find that cost in euro, given that €1 = £0·88 sterling?

(ii) This cost is 5% more than the cost a year ago.
Find, in euro, the cost a year ago.

(ii) An importer buys an item for £221 sterling when the rate of exchange is €1 = £0·85 sterling.

He sells it at a profit of 14% of the cost price.

Calculate, in euro, the price for which he sells the item.

Compound Interest

(ii) What sum of money invested at 6% per annum compound interest will amount to €5000 in 7 years?
Give your answer correct to the nearest euro.

(c) **(i)** What sum of money invested at 5% per annum compound interest will amount to €8682 in 3 years?
Give your answer correct to the nearest euro.

(ii) A sum of €P was invested at r % per annum compound interest.

The interest for the first year was €220.

The interest for the second year was €228·80.

Calculate r and P.

(b) €8500 was invested for 2 years at compound interest.

(i) The rate of interest for the first year was 4%.
Find the amount of the investment at the end of the first year.

(ii) The amount of the investment at the end of the second year was €9237·80.
Find the rate of interest for the second year.