

Financial Calculations Work Scheme (Pilot 2008-9)

Before starting this Intermediate (Level 2) FSMQ students must

- be able to order numbers (decimal, fractional, large, small and negative numbers),
- be familiar with the idea and basic use of percentages,
- be able to carry out basic calculations involving money
- be familiar with common units of time (e.g. 12 months in a year).

A suggested work scheme showing topic areas and methods to be covered is given below. This recommends a total of 60 guided learning hours that could be timetabled in a variety of ways eg 2 hours per week for 30 weeks, 4 hours per week for 15 weeks, 5 hours per week for 12 weeks. There is plenty of scope for varying the order and time allocation as many of the mathematical techniques can be introduced/revised in several different topic areas. Some techniques should be introduced as soon as possible and used throughout the course:

- selecting information from text and tables (two way and more complex) and using tables to record results
- using a calculator effectively and efficiently to carry out appropriate mathematical methods
- writing out calculations clearly and logically, rounding the result to the most appropriate value (eg nearest pence, £, £100 etc.)
- writing brief comments to explain calculations and interpret the results
- checking calculations using estimates, inverse operations and alternative methods
- using appropriate statistical methods of displaying results, including the use of spreadsheets to display results in tables and statistical charts and graphs
- using spreadsheet formulae to carry out calculations, including the use of relative and absolute referencing cell references and the 'fill down' facility.

Although topic areas are listed separately below, students will probably find it more motivating if a thematic approach is used. Possible themes include the financial implications of being a student, the management of predicted finances during a first year of work, the financial aspects of running a home, business or club or investigating different ways of purchasing an expensive item such as a house or car. At key points the thematic work could be supplemented with practice exercises when necessary.

| Topic Area | Content | Nuffield Resource |
|--|---|-------------------|
| Money Calculations involving fractions & % (7 hours) | Use interesting/relevant contexts to find out what students know about fractions and percentages. Extension/revision where necessary to include the following: <ul style="list-style-type: none"> • expressing one quantity as a fraction or % of another • calculating fractional and % increases and decreases eg 'mark-ups' and discounts • finding VAT and final price. Carry out reverse calculations: <ul style="list-style-type: none"> • find initial value when given a fraction of this value • find original price when given the final price and the % change (eg find the price before VAT from the price that includes VAT). Use spreadsheet formulae as well as calculations done by hand. (Include use of relative and absolute cell referencing as well as the 'fill down' facility). | |



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| Salary Calculations (8 hours) | Carry out calculations related to earnings (by hand and using spreadsheet formulae). Include the use of such terms as wage, salary, overtime, commission (including monthly wage = annual salary \div 12). Complete more complex calculations that include fixed and variable rates eg the calculation of income tax using 2 rates. Include use of the terms: income tax, PAYE (Pay As You Earn), national insurance, gross pay, net pay (= gross pay – deductions). Draw pie charts and bar charts (by hand and using spreadsheets) to illustrate results. | Payslips (starter) Data sheets including three simulated pay slips and related worksheet. Teacher Notes included. |
| | | Income Tax (skills activity) Notes, examples and exercises based on rates for the current tax year. |
| | | National Insurance (skills activity) Notes, examples and exercise based on rates for the current tax year. |
| Ratios (2 hours) | Use interesting/relevant contexts to assess students' knowledge of ratios and extend where necessary to include: <ul style="list-style-type: none"> expressing two quantities as a ratio dividing a quantity in a ratio using ratios to make comparisons. | Ratio Bingo & Matching Cards (skills activity) Activities that give learners practice in simplifying ratios. |
| Savings (8 hours) | Use terms related to saving – interest rates, compound interest, AER (Annual Equivalent Rate) and carry out related calculations including: <ul style="list-style-type: none"> use of the formula for simple interest using percentage rates (including AER) to find interest on savings compounded over a number of stages (use of formulae not required) Draw line graphs (by hand and using spreadsheets) to illustrate results. | Interest on Savings (skills activity) Notes, examples and exercises involving simple and compound interest. Comparison of different types of savings. |
| | | Simple & Compound Interest (skills activity) Spreadsheet giving examples and practice. Separate spreadsheet gives answers. |
| | | Saving (+ separate Teacher Notes) (assignment) Leaflet giving interest rates on three instant access savings accounts, exercise and sample examination questions based on the leaflet and an assignment. Exercise uses Excel spreadsheet. |
| Exchange Rates (2 hours) | Use exchange rates (eg to find the price in £ of a jacket whose price is \$80) | Convert Currency (skills activity) Interactive spreadsheet for practice in converting between £ and euros and £ and dollars |
| Insurance (5 hours) | Use tables and carry out calculations to do with insurance (including the use of terms such as insurance tax). Estimate probabilities from real data using relative frequency. Understand numerical values of probabilities and use ideas of basic probability to help make decisions. | Insurance Rates (skills activity) Students investigate the link between crime figures and the cost of vehicle and home insurance. |



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| <p>Loans (8 hours)</p> | <p>Use terms and carry out calculations related to borrowing – interest rates, compound interest, handling charges, commission, APR (Annual Percentage Rate).</p> <p>Use interpolation to estimate values not given in tables (eg repayments for a loan over 28 months, given the information for 24 and 36 months).</p> <p>Use percentage rates to find interest on loans compounded over a number of periods. Use APR to compare interest rates.</p> <p>Draw line graphs (by hand and using spreadsheets) to illustrate results.</p> | <p>Credit Cards (skills activity) Notes and example including spreadsheet formulae.</p> <p>Short Term Personal Loans (skills activity) Notes, examples and exercise. Requires information from building society or bank leaflets.</p> <p>Long Term Personal Loans (skills activity) Notes, examples and exercise.</p> <p>Mortgages (skills activity) Notes, examples and exercise.</p> |
| <p>Recording & Illustrating Accounts (10 hours)</p> | <p>Record financial transactions, using columns to record credits, debits and running totals. Include use of negative numbers to represent debts, debits, negative credit etc.</p> <p>Use a line graph to illustrate results.</p> <p>Use fractions, percentages, ratios, bar charts and pie charts to make comparisons.</p> | <p>Keeping an Account (skills activity) Notes, example and exercise.</p> |
| <p>Interpreting Diagrams (2 hours)</p> | <p>Interpret statistical diagrams that give financial information and line graphs that show how a quantity varies with time. Include using graphs to make sense of rates of change (eg recognising when inflation is greatest from a graph of price against time).</p> | |
| <p>Revision (8 hours)</p> | <p>Revise topics and try past papers. Discuss Data Sheet – make up and try questions based on it.</p> | |