Practical Maths for Plumbing & Heating Students and Apprentices

Scheme of Work
Practical Maths for Plumbing and Heating Students and Apprentices
Units 1–10

This Scheme of Work is designed to support the delivery of the Practical Maths for Plumbing and Heating Students and Apprentices course for Level 2 and Level 3 learners.

The programme develops learner confidence and competence in the mathematical skills required within plumbing and heating installation, maintenance and practical trade work.

Recommended delivery time: 3 hours per unit.

Unit 1 – Basic Mathematical Operations

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Addition, subtraction, multiplication and division
- BIDMAS/BODMAS
- Fractions, decimals and percentages
- Basic plumbing and heating calculations

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 2 – Fractions

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Proper and improper fractions
- Mixed numbers
- Fraction calculations
- Pipe measurements and fitting sizes

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 3 – Decimals

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Decimal calculations
- Rounding decimals
- Conversions
- Measurement and costing calculations

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 4 – Percentages

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Percentage calculations
- VAT and markup
- Efficiency calculations
- Trade costing

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 5 – Ratios

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Ratio notation
- Simplifying ratios
- Scaling ratios
- Chemical mixing and material proportions

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 6 – Powers and Standard Form

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Powers and indices
- Squares and cubes
- Standard form
- Technical measurements

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 7 – SI Units

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- SI units
- Metric prefixes
- Unit conversions
- Temperature, volume and length calculations

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 8 – Algebra

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Variables and expressions
- Equations
- Formula substitution
- Trade formulas

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 9 – Transposition of Formulas

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Formula rearrangement
- Inverse operations
- Practical trade formulas
- Flow and costing calculations

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Unit 10 – Trigonometry and Pythagoras

Duration: 3 Hours

Learning Objectives: Learners will develop mathematical skills relevant to plumbing and heating applications.

Key Topics Covered:

- Pythagoras' theorem
- SOHCAHTOA
- Missing sides and angles
- Pipe runs and flue calculations

Assessment Methods: Worksheet activities, tutor questioning, independent calculations and practical trade applications.

Resources Required: PowerPoint slides, worksheets, answer sheets, calculators and learner guide.

Tutor Guidance

Recommended Teaching Approach

• Keep lessons practical and trade-focused
• Use realistic plumbing and heating examples
• Reinforce calculator use regularly
• Build learner confidence gradually
• Encourage learners to explain methods clearly

Common Learner Difficulties

• Weak confidence in maths
• Calculator misuse
• Formula rearrangement
• Missing units
• Weak problem-solving skills

Intended Impact

By completing this course learners should improve confidence, accuracy and independence when carrying out plumbing and heating calculations.