Practical Maths for Electrical Installation Students & Apprentices

Unit 8: Algebra.

Teacher Notes:

Lesson Overview

This unit introduces algebra and its use in electrical calculations, including working with symbols, expressions and formulae.

Learning Objectives

- Understand algebra and its purpose
- Use algebraic symbols and expressions correctly
- Perform operations with algebraic terms
- Work with brackets and expressions

Why It Matters

- Electrical calculations rely on formulas (Ohm's Law, power, voltage drop)
- Required to rearrange equations and solve unknowns
- Essential for design, testing and fault finding

Core Concepts

- Letters represent unknown values
- Expressions contain terms (e.g. 3x, 5y)
- Multiplication often written without × (e.g. 2x)

Like Terms

- Only like terms can be added or subtracted
- Terms must have same letters and powers

Working with Brackets

- Multiply every term inside brackets
- Negative signs change all terms
- Expand expressions step by step

Multiple Brackets

- Use FOIL method (first, outer, inner, last)
- Multiply each term in both brackets

Electrical Applications

- Rearranging Ohm's Law and power formulas
- Design calculations
- Predicting and checking test results

Common Mistakes

- Adding unlike terms
- Not expanding brackets correctly
- Incorrect sign handling

Key Takeaway

Algebra is essential for solving electrical problems and working confidently with formulas.