



**TRADE SKILLS
HUB ACADEMY**

ELECTRICAL & PLUMBING MATHEMATICS



**ELECTRICAL
APPLICATIONS**



**PRACTICAL
MATHS**



**PLUMBING
APPLICATIONS**

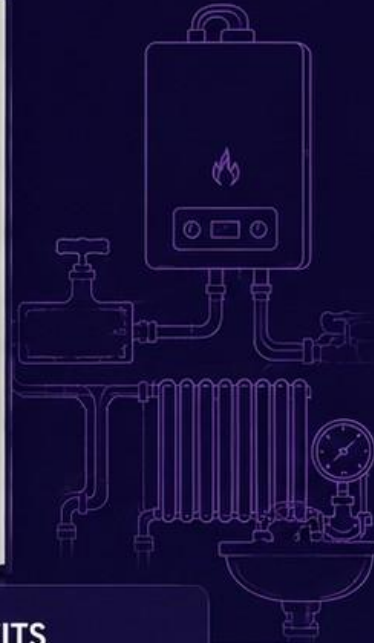
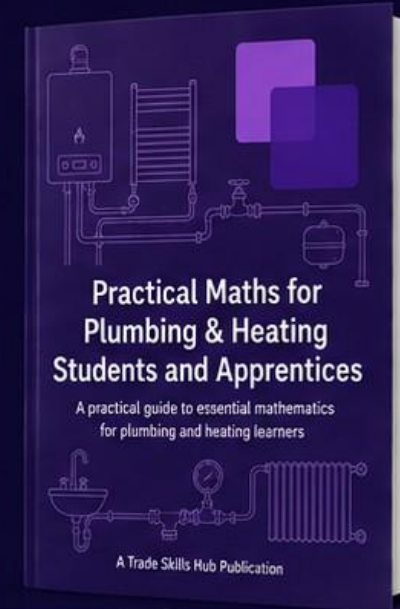
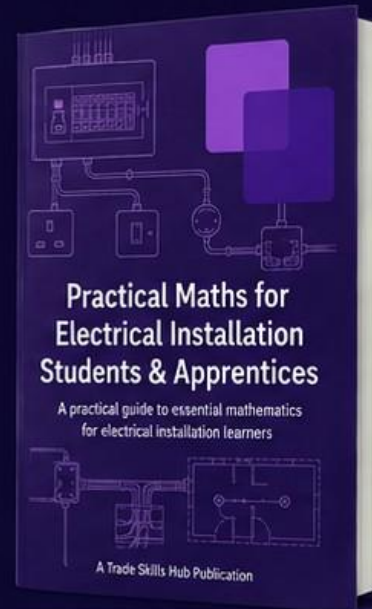


**PRACTICAL MATHS SKILLS.
REAL APPLICATIONS. CONFIDENT RESULTS.**



INTRODUCING Practical Maths Courses for **Electrical &** **Plumbing** Learners

Practical maths. Real relevance. Better outcomes.



OUR PURPOSE

To provide clear, practical and course-relevant maths resources that build confidence, improve understanding and support success in electrical and plumbing programmes.



WHY WE CREATED THESE COURSES

Many learners struggle with maths because examples feel abstract or irrelevant to their trade. These courses were written **specifically for electrical and plumbing and heating learners**, using real-world scenarios and language they understand.



BENEFITS FOR LEARNERS

- ✓ Build confidence with step-by-step explanations
- ✓ See how maths applies in real trade situations
- ✓ Improve accuracy and reduce costly mistakes
- ✓ Develop essential skills for exams, assessments and the workplace
- ✓ Stay engaged with clear, practical and relevant content



BENEFITS FOR LECTURERS

- ✓ Save time with ready-to-use, structured resources
- ✓ Consistent, high-quality content aligned to trade needs
- ✓ Easily integrate into lessons and schemes of work
- ✓ Support all learner abilities with clear explanations and worked examples
- ✓ Improve retention, progress and achievement



ADDRESSING THE PAIN POINTS



Maths anxiety and lack of confidence



Disconnect between maths and the trade



Time-consuming planning and resource creation



Low engagement and poor retention



OUR SOLUTION. BETTER OUTCOMES.



Relevant, practical content that makes sense



Stronger maths skills, greater confidence and better results



Engaged learners who enjoy learning

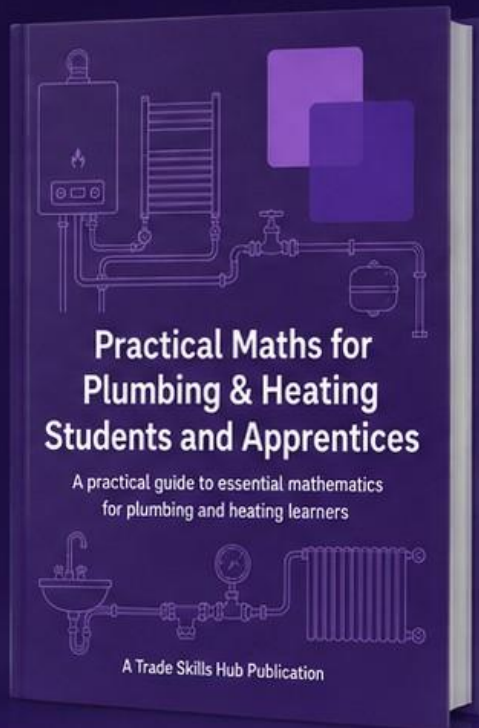
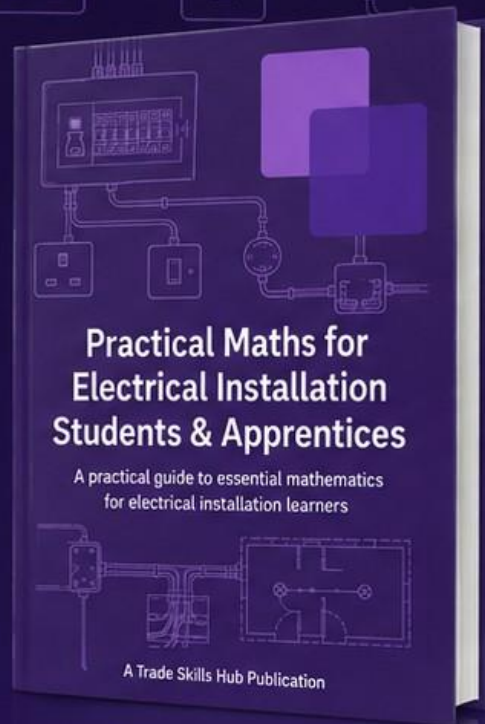
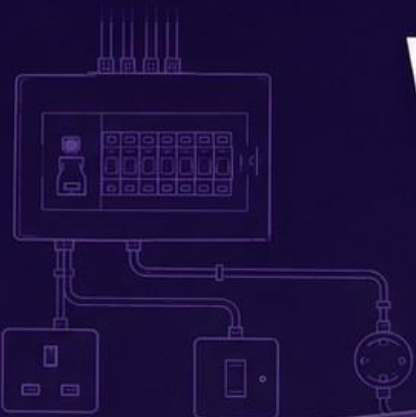


Teachers empowered with resources that work

✓ Practical. Relevant. Effective. Everything you need to teach maths with confidence – and help learners succeed in their trade.

WHAT'S IN THE COURSEWORK?

Everything you need to teach with confidence
and support every learner.



STUDENT HANDBOOK

Clear explanations,
worked examples and
practice questions.



POWERPOINT SLIDES

Ready-to-use slides to
support engaging and
effective teaching.



WORKSHEETS

Printable activities to
reinforce learning and
build confidence.



TEACHER NOTES

Helpful guidance and
answers to support
every lesson.



LESSON PLANS

Structured plans to save
time and support
effective delivery.



QUICK START GUIDE

Get started quickly with
essential information
and top tips.



HOMEWORK PACK

Additional questions to
consolidate learning
outside the classroom.



FINAL ASSESSMENT PACK

Assess understanding
and track progress with
confidence.



SCHEME OF WORK

A complete overview
to guide teaching and
learning across the course.

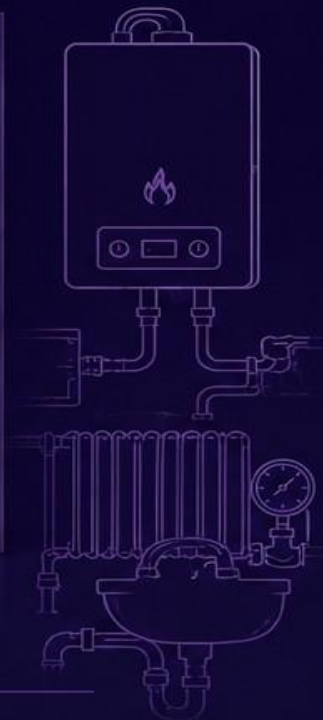
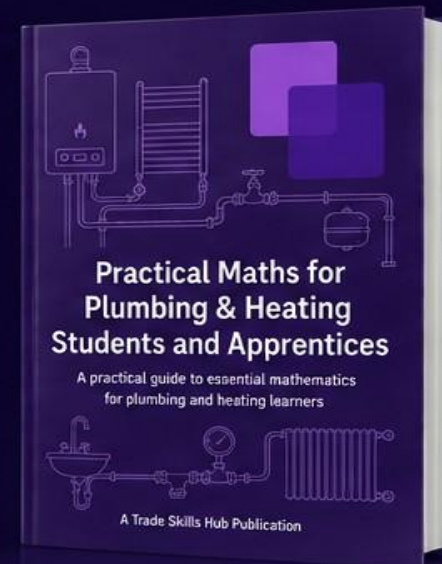
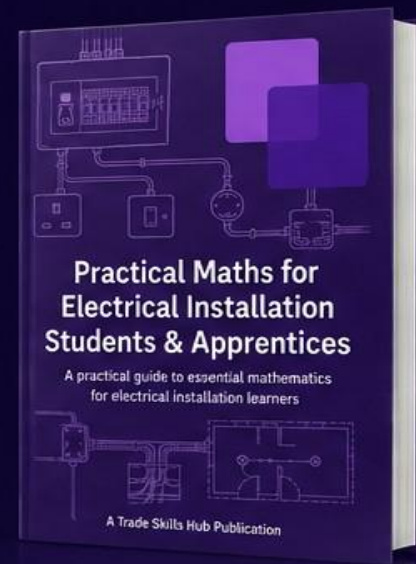


COMPLETE. PRACTICAL. READY TO TEACH.

All the resources you need – in one place.



PRACTICAL MATHS FOR ELECTRICAL & PLUMBING LEARNERS



Ten individual units written specifically for electrical and plumbing and heating courses.

THE UNITS



1

BASIC MATH
OPERATIONS

$\frac{1}{2}$

2

FRACTIONS

0.25

3

DECIMALS

%

4

PERCENTAGES

2:3

5

RATIOS

x^2

6

POWERS

m

7

SI UNITS

x

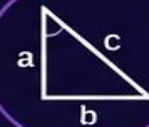
8

ALGEBRA

$y=mx+c$

9

TRANSPOSITION



10

TRIGONOMETRY
& PYTHAGORUS



BUILT FOR TRADE LEARNERS

Real-world examples that make sense.



COURSE SPECIFIC

Tailored for Electrical and Plumbing & Heating programmes.



BUILD CONFIDENCE

Step-by-step learning to strengthen understanding and skills.

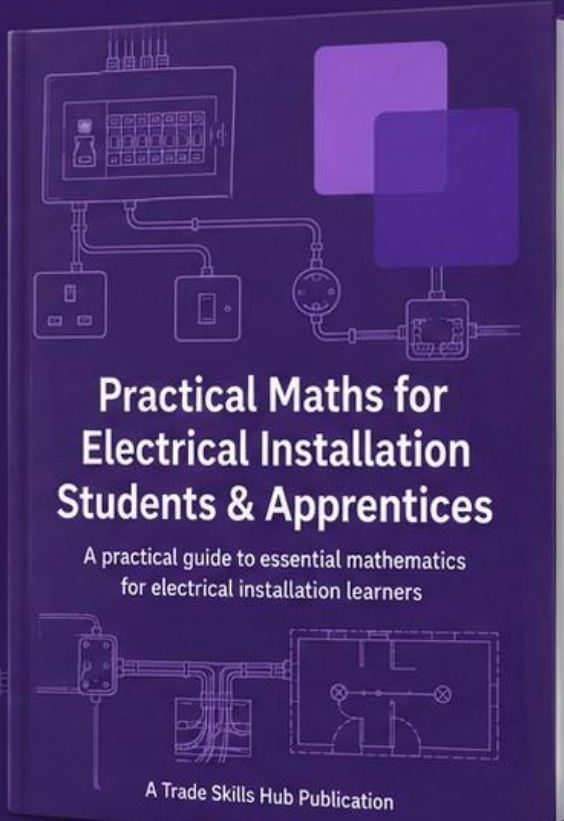


PRACTICAL. RELEVANT. ESSENTIAL.

The maths you need for the trade you're building.



Student Handbook



Practical Maths for Electrical Installation Students & Apprentices

A practical guide to essential mathematics
for electrical installation learners

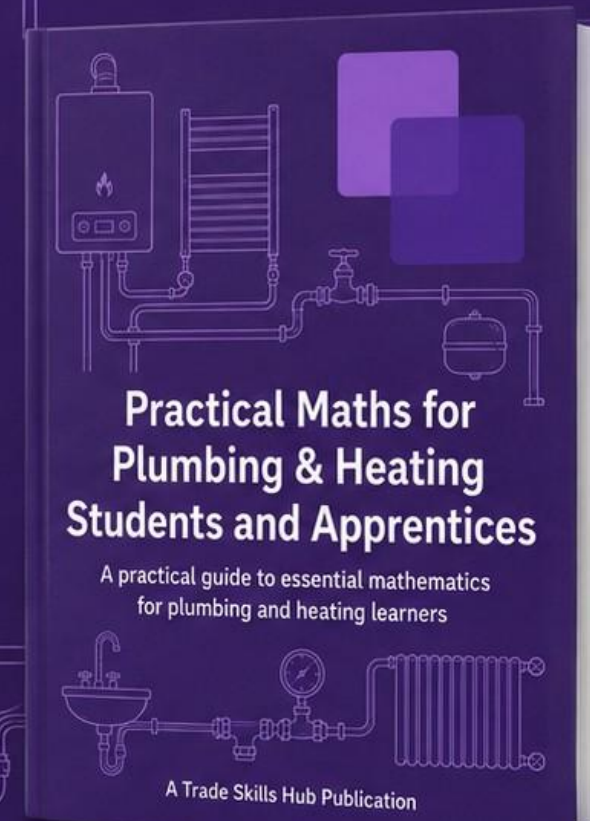
A Trade Skills Hub Publication



Electrical
Installation



Plumbing &
Heating



Practical Maths for Plumbing & Heating Students and Apprentices

A practical guide to essential mathematics
for plumbing and heating learners

A Trade Skills Hub Publication

WHAT'S INSIDE THE PLUMBING HANDBOOK

Our plumbing handbook gives learners the essential technical knowledge and practical maths skills they need — explained clearly, applied confidently, and built for real-world plumbing work.



Clear Explanations

Every topic is explained in simple, easy-to-understand steps.



Practice Questions

Plenty of exercises to build confidence and improve problem-solving skills.



Worked Examples

Step-by-step examples showing how maths and plumbing calculations are used in real situations.



Answers & Solutions

All practice questions include full answers and clear solutions.



Plumbing Applications

Maths applied to real plumbing tasks and industry-standard scenarios.



Quick Reference

Handy summary tables, formulas and conversion charts for easy revision.



Common Mistakes

Highlights typical errors and how to avoid them in calculations.



Practical Calculations

Covers essential calculations including flow rate, pressure loss, pipe sizing, loads and hot water systems.



Supports learning at Level 2 & Level 3



Written for students, apprentices & trainees



Aligned with industry standards & practice



Builds confidence, accuracy & competence



Essential for every plumber

2.3 Calculating Flow Rate

Flow Rate (Q)

Flow rate is the amount of water passing through a pipe per unit of time.

Formula:

$$Q = \frac{V}{t}$$

Where:

Q = Flow rate (litres per minute)
V = Volume (litres)
t = Time (seconds)

Example – Fill a Cylinder

A cylinder is filled with 15 litres of water in 30 seconds. Calculate the flow rate in litres per minute.

Solution:

$$Q = (15 / 30) \times 60 = 30 \text{ L/min}$$



PLUMBING APPLICATIONS

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4.1 Pipe Sizing and Velocity

Velocity (v)

Velocity is the speed at which water flows through a pipe.

Formula:

$$v = \frac{4Q}{\pi D^2}$$

Where:

v = Velocity (m/s)
Q = Flow rate (m³/s)
D = Pipe diameter (m)

Example

Water flows at 0.75 L/s through a pipe with an internal diameter of 22 mm. Calculate the velocity.

Solution:

$$\begin{aligned} Q &= 0.75 \text{ L/s} = 0.00075 \text{ m}^3/\text{s} \\ D &= 22 \text{ mm} = 0.022 \text{ m} \\ v &= 4 \times 0.00075 / (3.142 \times 0.022^2) \\ v &= 1.97 \text{ m/s} \end{aligned}$$

PLUMBING APPLICATIONS

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Example – System Pressure

A cold water system has a static pressure of 350 kPa. The pressure at a tap is 250 kPa. Calculate the pressure loss.

Formula:

$$\text{Pressure Loss} = \text{Static Pressure} - \text{Outlet Pressure}$$

Solution:

$$\begin{aligned} \text{Pressure Loss} &= 350 - 250 \\ &= 100 \text{ kPa} \end{aligned}$$



PLUMBING APPLICATIONS

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BUILT FOR PLUMBING LEARNERS. WRITTEN BY AN EXPERT.


Practical knowledge. Real calculations. Confident results.

WHAT'S INSIDE THE ELECTRICAL HANDBOOK

Our handbook gives learners the essential mathematical skills they need for electrical installation — explained clearly, applied practically, and reinforced with confidence.




Clear Explanations
Every topic is explained in simple, easy-to-understand steps.




Practice Questions
Plenty of exercises to build confidence and improve problem-solving skills.



Worked Examples
Step-by-step examples showing how maths is used in real situations.



Answers & Solutions
All practice questions include full answers and clear solutions.




Electrical Applications
Maths applied to electrical installation tasks and real-world scenarios.



Quick Reference
Handy summary tables, formulas and rules for easy revision.



Common Mistakes
Highlights typical errors and how to avoid them in calculations.



Practical Calculations
Covers essential calculations including current, voltage, power, cable sizing, voltage drop and more.

1.4 Adding and Subtracting Signed Numbers

Unlike Signs Together

When adding or subtracting, if unlike signs are together, subtract the smaller from the larger and take the sign of the larger number.

Examples:

- $3 + (-4) = 3 - 4 = -1$
- $5 + (-2) = 5 - 2 = 3$
- $-7 + 3 = -4$

Like Signs Together

When like signs are together, the overall sign is positive (addition).

Examples:

- $3 - (-4) = 3 + 4 = 7$
- $-5 - (-3) = -5 + 3 = -2$
- $6 - (-2) = 6 + 2 = 8$

Memory Aid

Signs	Result	Example
+ and +	Add (positive)	$+(+5) = +5$
- and -	Add (becomes +)	$-(-5) = +5$
+ and -	Subtract	$+(-5) = -5$
- and +	Subtract	$-(+5) = -5$

1.5 Multiplication and Division with Signed Numbers

Unlike Signs

When multiplying or dividing numbers with unlike signs, the result is negative.

Examples:

- $3 \times (-4) = -12$
- $(-6) \times 2 = -12$
- $20 \div (-4) = -5$
- $(-15) \div 3 = -5$

Like Signs

When multiplying or dividing numbers with like signs, the result is positive.

Examples:

- $3 \times 4 = 12$
- $(-3) \times (-4) = 12$
- $20 \div 4 = 5$
- $(-20) \div (-4) = 5$

Sign Rules Summary

Operation	Signs	Result Sign
Multiplication	Same signs	Positive
Multiplication	Different signs	Negative
Division	Same signs	Positive
Division	Different signs	Negative

Example – Electrical Application

Calculate the current (I) drawn by a 2.2 kW heater on a 230 V supply.

Formula:

$$I = \frac{P}{V}$$

Where:

P = Power (W)
 V = Voltage (V)

Solution:

$$I = \frac{2200}{230}$$

$$I = 9.57 \text{ A}$$

Answer: The current is 9.57 A



BASIC MATHEMATICAL OPERATIONS

4

BASIC MATHEMATICAL OPERATIONS

5

ELECTRICAL APPLICATIONS

42



BUILT FOR ELECTRICAL LEARNERS. WRITTEN BY AN EXPERT.

Practical maths skills. Real electrical applications. Confident results.



Supports learning at Level 2 & Level 3



Written for students, apprentices & trainees



Aligned with trade standards & practice



Builds confidence, accuracy & competence



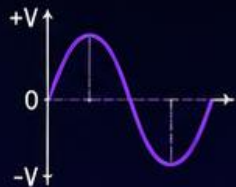
Essential for every electrician

UNIT 1

BASIC OPERATIONS







Practical Maths for
Electrical Installation
Students and Apprentices


- ✓ Build strong maths foundations
- ✓ Understand signs and directed numbers
- ✓ Apply BODMAS and brackets with confidence
- ✓ Use maths in real electrical scenarios



WHAT YOU WILL STUDY


Essential maths operations and rules
for electrical installation work

-  **Directed Numbers**
Understand positive and negative values and number lines
-  **Addition & Subtraction**
Work confidently with signed numbers and apply sign rules
-  **Multiplication & Division**
Use signs correctly in multiplication and division
-  **BODMAS**
Apply the correct order of operations every time
-  **Brackets**
Work with single, nested and adjacent brackets
-  **Worked Examples**
Step-by-step examples using real electrical scenarios

 Strong maths skills. Safe electrical work.
Skills for the trade.

TEACHING RESOURCES


Everything you need to teach and assess

-  **Comprehensive Notes**
Clear explanations with electrical examples




-  **Presentation Slides**
Editable slides to support your delivery



-  **Practice Questions**
Questions with answers to test understanding



-  **Answers Included**
Full worked solutions for all questions



 **QUALITY RESOURCES.
BETTER LEARNING OUTCOMES.**

UNIT 3

DECIMALS

Practical Maths for
Plumbing & Heating
Students and Apprentices

- ✓ Build strong maths foundations
- ✓ Work with decimals confidently
- ✓ Apply maths to plumbing & heating systems
- ✓ Use real world examples and industry formulas
- ✓ Develop accuracy and calculation confidence



 13.5 l/min FLOW RATE


 68.5 °C TEMPERATURE

 2.3 bar PRESSURE

WHAT YOU WILL STUDY

Essential decimal skills for plumbing and heating calculations


- 0.75** **Decimal Numbers**
Understand place value, decimal points and number comparisons
- + -** **Add & Subtract Decimals**
Align decimal points and work accurately with confidence
- × ÷** **Multiply & Divide Decimals**
Use correct methods for decimal operations
- % 1/2** **Conversions**
Convert between decimals, fractions and percentages
- 0.01** **Rounding & Precision**
Round decimals and apply significant figures correctly
-  **Practical Applications**
Apply decimals to flow, pressure, temperature and heat calculations
-  **Worked Examples**
Step-by-step examples using real plumbing and heating scenarios

 Strong maths skills. Effective systems.
Skills for the trade.

TEACHING RESOURCES

Everything you need to teach and assess

-  **Comprehensive Notes**
Clear explanations with plumbing and heating examples 
-  **Presentation Slides**
Editable slides to support your delivery 
-  **Practice Questions**
Questions with answers to test understanding 
-  **Answers Included**
Full worked solutions for all questions 

 **QUALITY RESOURCES.
BETTER LEARNING OUTCOMES.**

UNIT 4

PERCENTAGES

Practical Maths for
Electrical Installation
Students and Apprentices


- ✓ Understand the theory
- ✓ Apply to real electrical work
- ✓ Build confidence with maths



WHAT YOU WILL STUDY

Essential percentage skills for
electrical installation work

-  **Core Concepts**
Percent, fraction, decimal and conversions
-  **Calculations**
Finding percentages and what one value is of another
-  **Increase & Decrease**
Calculate percentage changes in electrical values
-  **Electrical Applications**
Voltage drop, efficiency, error, tolerance and more
-  **Practice & Examples**
Worked examples and practice questions to build confidence

 Practical maths. Real electrical applications.
Skills for the trade.



TEACHING RESOURCES

Everything you need to teach and assess

-  **Comprehensive Notes**
Clear explanations with electrical examples 
-  **Presentation Slides**
Editable slides to support your delivery 
-  **Practice Questions**
Questions with answers to test understanding 
-  **Answers Included**
Full worked solutions for all questions 

 **QUALITY RESOURCES.
BETTER LEARNING OUTCOMES.**

UNIT 5

RATIOS

Practical Maths for
Plumbing & Heating

Students and Apprentices

HOT
2 PARTS

COLD
1 PART

MIXED
3 PARTS

- ✓ Understand ratios and relationships
- ✓ Simplify, convert and solve ratios
- ✓ Apply to real plumbing & heating systems
- ✓ Calculate mixing and flow splits
- ✓ Improve accuracy and confidence



FLOW SPLIT
2 : 1
160 L/min : 80 L/min



MIXING RATIO
2 : 1
Hot : Cold



PRESSURE RATIO
3 : 2
Supply : Outlet



WHAT YOU WILL STUDY

Essential ratio skills for plumbing and heating calculations

3:1

Ratio Fundamentals
Understand ratios, order, and how to express them



Simplifying Ratios
Find HCF and simplify to lowest terms



Equivalent Ratios
Create and recognise equivalent ratios



Conversions & Unknowns
Convert forms and solve for missing values



Mixing & System Calculations
Hot/cold mixing, flow splits and system design



Applications & Examples
Real-world plumbing and heating scenarios



Practice & Mistakes
Test your skills and avoid common errors



Strong maths skills. Efficient systems.
Skills for the trade.

$$\frac{a}{b} = \frac{c}{d}$$



TEACHING RESOURCES

Everything you need to teach and assess



Comprehensive Notes
Clear explanations with plumbing and heating examples



Presentation Slides
Editable slides to support your delivery



Practice Questions
Questions with answers to test understanding



Answers Included
Full worked solutions for all questions



**QUALITY RESOURCES.
BETTER LEARNING OUTCOMES.**

WORKSHEETS & TEACHER NOTES



TRADE SKILLS
HUB ACADEMY



Practical maths resources for
Electrical & Plumbing learners.

WORKSHEET EXAMPLES

Practical Maths for
Electrical Installation
Students &
Apprentices

Worksheet 5: Questions

Unit 5: Ratios

Name: _____ Date: _____

Instructions: Answer all 20 questions. Show your working in the space provided. Answers are given on the final page.

Section A: Understanding Ratios

Q1. Write the ratio 10:20 in its simplest form.

Working: _____

Answer: _____

Q2. Simplify the ratio 15:25.

Working: _____

Answer: _____

Q3. Express 8:12 as a ratio in its simplest form.

Working: _____

Answer: _____

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Unit 3: Decimals for
Plumbing & Heating Learners

Worksheet 3

Practice Questions

Set A: Understanding decimals

- Which is larger 13.5 or 13.24?
- Which is larger 0.5 or 0.05?
- Order these decimals from smallest to largest: 2.5, 0.25, 25, 2.05.
- Which is larger 0.75 or 0.8?
- Order these decimals from smallest to largest: 1.5, 0.15, 15, 1.05.

Set B: Adding and subtracting decimals

- Calculate $13.5 + 2.24$.
- Calculate $3.0 - 0.6$.
- Calculate $0.5 + 0.03 + 1.234$.
- Calculate $15 - 0.75$.
- Calculate $2.5 + 3.75 + 0.125$.

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TEACHER NOTES

Practical Maths for
Electrical Installation
Students &
Apprentices

Unit 6: Powers of Ten and Standard Form for Plumbing and Heating Learners

Teacher Notes:

Overview

These teacher notes are based on Unit 6: Powers of Ten and Standard Form for Plumbing and Heating Learners and are designed for Level 2 and Level 3 plumbing and heating learners.

Learning objectives

By the end of delivery, learners should be able to:

- Recognise and use common mathematical symbols.
- Understand powers of ten and indices.
- Convert numbers to and from standard form.
- Use engineering notation and common prefixes.
- Apply powers of ten to plumbing and heating calculations.

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Core teaching points

- Mathematical symbols matter**
Essential for reading technical information correctly.
- Understanding powers of ten**
Positive, zero and negative powers follow place-value patterns.
- Standard form rules**
Use $a \times 10^n$ where $1 \leq a < 10$. Move the decimal and count the places.
- Engineering form and prefixes**
Use prefixes in multiples of 1000 (k, M, m, μ , n, p).
- Converting between forms**
Practise both directions regularly.
- Trade application areas**
Use real plumbing and heating values to build understanding.



TOPICS COVERED

Practical Maths for
Electrical Installation
Students &
Apprentices

Unit 7: SI Units

Teacher Notes:

Lesson Overview

This unit introduces SI units and their importance in electrical work, ensuring accurate measurement, calculation and communication.



Base Units

Ampere (A), Second (s), Metre (m), Kelvin (K)



Derived Units (Electrical)

Volt (V), Ohm (Ω), Watt (W), Hertz (Hz)



Key Formulas & Units

$V = I \times R$, $P = V \times I$, $E = P \times t$



Electrical Applications

Measurements, test instruments, cable sizing, compliance and documentation



Notation Rules

Correct spacing, symbols and case, no pluralisation

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STUDENT PRACTICE WORKSHEETS

Structured questions covering key topics with space for working and answers.



TEACHER SUPPORT NOTES

Clear teaching guidance, key concepts, examples and common learner pitfalls.



CLEAR TOPIC GUIDANCE

Concise summaries of key topics with applications in electrical & plumbing work.



BUILT FOR TRADE LEARNERS. WRITTEN BY AN EXPERT.

Practical maths skills • Real-world applications • Confident results



LESSON PLAN & SCHEME OF WORK

PRACTICAL MATHS FOR ELECTRICAL LEARNERS
LEVEL 2 & LEVEL 3



TRADE SKILLS
HUB ACADEMY



STRUCTURED
LESSONS



PRACTICAL
APPLICATION



MEASURABLE
PROGRESS



LESSON PLAN



DURATION
3 HOURS



LEVEL
LEVEL 2 / LEVEL 3



DELIVERY FORMAT
CLASSROOM /
WORKSHOP
THEORY SESSION



1 LEARNING OBJECTIVES

By the end of this lesson, learners will be able to:

- Understand place value in decimal numbers
- Perform calculations with decimals (add, subtract, multiply, divide)
- Convert between decimals, fractions, and percentages
- Apply decimal calculations to electrical scenarios
- Identify and correct common mistakes when working with decimals



2 PRIOR KNOWLEDGE / ENTRY REQUIREMENTS

Learners should:

- Be confident with basic number skills (Unit 1)
- Have an understanding of fractions (Unit 2)
- Be able to use a calculator

3 LESSON STRUCTURE (3 HOURS TOTAL)

15–20 mins	Starter Activity – Reinforce fractions & introduce decimals
65–75 mins	Teaching Input – Core concepts & worked examples
10–15 mins	Break
50–60 mins	Guided Practice – Supported worksheet completion
40–45 mins	Independent Practice – Build confidence
25–30 mins	Review & Feedback – Consolidate learning
10 mins	Plenary – Recap & link to next unit

4 RESOURCES REQUIRED



PowerPoint
Slides



Student
Worksheets



Course
Handbook



Answer
Sheets



Calculators



Whiteboard /
Flipchart



SCHEME OF WORK (LEVEL 2 & 3)

TOTAL GUIDED LEARNING HOURS: 30 (10 UNITS × 3 HOURS)

1

BASIC OPERATIONS



- Perform accurate addition, subtraction, multiplication, and division
- Apply order of operations (BODMAS)
- Use written and mental calculation strategies
- Identify and correct common calculation errors

2

FRACTIONS



- Understand equivalent fractions
- Add and subtract fractions with different denominators
- Multiply and divide fractions
- Apply fractions in practical contexts

3

DECIMALS



- Understand place value
- Perform decimal calculations
- Convert between fractions and decimals
- Apply rounding appropriately

4

PERCENTAGES



- Calculate percentages of values
- Apply percentage increase and decrease
- Convert between fractions, decimals, and percentages
- Use percentages in practical problems

5

RATIOS



- Simplify ratios
- Divide quantities in a given ratio
- Apply proportional reasoning
- Use ratios in real-world contexts

6

POWERS (INDICES)



- Understand index notation
- Apply index laws
- Calculate powers and roots
- Use indices in calculations

7

SI UNITS



- Identify base SI units
- Use prefixes such as kilo and milli
- Convert between units
- Apply units in electrical contexts

8

ALGEBRA



- Understand algebraic notation
- Solve simple equations
- Rearrange expressions
- Apply algebra to practical problems

9

TRANSPOSITION



- Understand balancing equations
- Rearrange formulas
- Apply inverse operations
- Use formulas in electrical calculations

10

TRIGONOMETRY & PYTHAGORAS



- Understand right-angled triangles
- Apply Pythagoras' theorem
- Use trigonometric ratios
- Solve practical problems involving angles and distances



CURRICULUM INTENT

This course is designed to develop learners' mathematical confidence and competence within real electrical contexts. It aims to remove barriers to progress by embedding maths into practical applications relevant to industry.



CURRICULUM IMPLEMENTATION

Delivery is structured into 10 units, each delivered over a 3-hour session. Teaching follows a consistent model: recap, concept delivery, guided practice, independent application, and review. Resources include slides, worksheets, and applied examples linked to electrical installation tasks.



CURRICULUM IMPACT

Learners demonstrate improved accuracy, confidence, and ability to apply maths in practical scenarios. Progress is measured through unit assessments, a final assessment, and observation of learner performance.



PRACTICAL
APPLICATIONS



BUILD
CONFIDENCE



REAL-WORLD
MATHS SKILLS



MEASURABLE
PROGRESS



DEVELOPING ESSENTIAL MATHS SKILLS
FOR ELECTRICAL SUCCESS



SUPPORTS LEVEL 2
& LEVEL 3 LEARNERS



ALIGNED WITH INDUSTRY
STANDARDS



APPLIED TO REAL
ELECTRICAL WORK



BUILT FOR TRADE
LEARNERS

HOMWORK PACK & FINAL ASSESSMENTS

For Level 2 & Level 3 Electrical Learners



TRADE SKILLS
HUB ACADEMY



PRACTICE
MORE



ASSESS
CONFIDENCE



BUILD
SKILLS



TRACK
PROGRESS

- ✓ 10 Units
- ✓ Homework Pack
- ✓ Assessments
- ✓ Full Lecturer Answers



HOMWORK PACK – STUDENT VERSION (UNITS 1–10)

Reinforce learning with targeted practice for every unit.

- Varied questions per unit
- Covers core skills & real applications
- Structured sections: Core, Apply, Challenge
- Builds confidence and problem-solving ability

Unit 3: Decimals

Section A – Core Skills

- $0.8 + 0.45$ _____
- $2.4 - 1.1$ _____
- 3.2×2 _____
- $4.8 + 1.2$ _____
- Round 7.356 to 2 dp _____

Section B – Application

- Add currents: $1.25 \text{ A} + 0.75 \text{ A}$ _____
- Subtract: $6.0 - 2.4$ _____
- Multiply: 2.2×4 _____
- Divide: $9.6 \div 3$ _____
- Convert $3/4$ to decimal _____

Section C – Challenge

- $1.75 + 2.35$ _____
- 5.6×1.5 _____
- $8.4 + 0.7$ _____

Unit 5: Ratios

Section A – Core Skills

- Simplify the ratio 10:20. _____
- Simplify the ratio 8:12. _____
- Divide 30 in the ratio 1:2. _____
- Divide 40 in the ratio 3:1. _____
- Write 15:5 in its simplest form. _____

Section B – Application

- A job uses 2 parts trunking to 3 parts conduit. If there are 50 parts in total, how many are trunking? _____
- Split £60 in the ratio 2:1. _____
- A cable run is shared in the ratio 4:1. If the total is 100 m, find both lengths. _____

Section C – Challenge

- 9:12 in simplest form _____
- Divide 20 in the ratio 1:3. _____
- A drawing scale is 1:50. What real length is represented by 2 m on the drawing? _____

Unit 7: SI Units

Section A – Core Skills

- Convert 1 kW to W. _____
- Convert 5000 mA to A. _____
- Convert 2500 mm to m. _____
- Convert 0.75 kV to V. _____
- Convert 2000 W to kW. _____

Section B – Application

- A heater is rated at 2.5 kW. Express this in watts. _____
- A current is measured as 1500 mA. Express this in amps. _____
- A cable length is 35 m. Express this in millimetres. _____

Section C – Challenge

- Express 0.002 A in milliamperes. _____
- Express 0.0005 m in micrometres. _____
- A drawing scale is 1:50. Express in kW. _____

10
UNITS



FINAL ASSESSMENTS – QUESTIONS ONLY

10 Unit Assessments + 1 Final Mixed Assessment



Exam-style
assessment
questions



Tests understanding
and real-world
application



Prepares learners
for workplace
confidence

Unit 4: Percentages

Q	Question	My Answer	Possible Marks	Actual Marks
1	25% of 80		1	
2	10% of 200 W		1	
3	Increase 100 by 15%		1	
4	Decrease 50 by 20%		1	
5	A lighting circuit load is 500 W. If 10% is added as allowance, what is the new load?		2	
6	A tool costs £120. It is reduced by 25%. What is the sale price?		2	
7	A learner scores 18 out of 20. What percentage is this?		1	
8	A load increases from 80 W to 100 W. What is the percentage increase?		2	
9	Find 5% of 300		1	
10	A circuit has 90% efficiency from an input of 600 W. What is the useful output?		1	
Total Marks				

Final Mixed Assessment

Q	Question	My Answer	Possible Marks	Actual Marks
1	$25\% + 87$		1	
2	$3/5 + 1/3$		1	
3	$2.45 + 1.37$		1	
4	15% of 240		1	
5	A load of 1.2 kW is used for 3.5 hours. Calculate the energy used in kWh.		2	
6	A cable run is 42 m long. If 1/3 is installed, how many metres remain?		2	
7	A current of 2.4 A flows through a resistance of 15 Ω . Calculate power.		2	
8	Convert 0.075 kV to volts.		1	
9	Increase £160 by 12.5%.		2	
10	Simplify the ratio 18:24.		1	
Total Marks				

1
FINAL
ASSESSMENT



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Unit 3: Decimals – Answers

- Section A – Core Skills
- $0.8 + 0.45 = 1.25$
 - $2.4 - 1.1 = 1.3$
 - $3.2 \times 2 = 6.4$
 - $4.8 + 1.2 = 6$
 - 7.356 rounded to 2 dp = 7.36

Unit 7: SI Units – Answers

- Section B – Application
- 1 kW = 1000 W
 - 5000 mA = 5 A
 - 2500 mm = 2.5 m
 - 0.75 kV = 750 V
 - 2000 W = 2 kW

THANK YOU FOR WATCHING



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