Practical Maths for Plumbing & Heating Students and Apprentices

Homework Pack – Student Version (Units 1–10)

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Unit 1 – Basic Operations

1. Add pipe lengths: 12 m + 18 m + 25 m
2. Total radiator outputs: 1200 W + 1500 W + 1800 W
3. A 96 litre tank is split equally across 12 outlets. Litres per outlet?
4. Multiply: 7 × 11
5. Subtract: 100 − 63

Unit 2 – Fractions

6. A pipe length is 3/4 m and you add 1/8 m. Total length?
7. A heating system uses 2/5 of a chemical bottle and then 1/5 more. Total used?
8. Multiply: 4/9 × 3
9. Divide: 5/6 ÷ 5
10. Convert 3/4 to decimal

Unit 3 – Decimals

11. Add flow rates: 1.25 L/s + 0.75 L/s
12. Subtract: 6.0 − 2.4
13. Multiply: 2.2 × 4
14. Divide: 9.6 ÷ 3
15. Convert 3/4 to decimal

Unit 4 – Percentages

16. Increase £150 by 20%
17. Decrease boiler output of 80 kW by 25%
18. Increase water pressure reading of 60 psi by 50%
19. Decrease 200 litres by 15%
20. 5% of 120

Unit 5 – Ratios

21. Divide 48 litres in ratio 2:2
22. Divide 60 m of pipe in ratio 4:2
23. Split £90 material cost in ratio 3:2
24. Divide 72 litres in ratio 5:3
25. Split 150 fittings in ratio 1:2

Unit 6 – Powers (Indices)

26. 2^5
27. 7^2
28. 10^2
29. 8^2
30. 11^2

Unit 7 – SI Units

31. Convert 0.8 MPa to kPa
32. Convert 5000 W to kW
33. Convert 12 cm pipe length to mm
34. Convert 1.2 kg to g
35. Convert 50 mm pipe diameter to m

Unit 8 – Algebra

36. $x + 12 = 25$
37. $6x = 24$
38. $x - 8 = 2$
39. $x/4 = 6$
40. $2x + 6 = 14$

Unit 9 – Transposition of Formulae

41. Rearrange $d = vt$ for v
42. Rearrange $P = Q/t$ for Q
43. Rearrange $V = IR$ for R
44. Rearrange $E = mc^2$ for m
45. Rearrange $y = mx + c$ for c

Unit 10 – Trigonometry & Pythagoras

46. Find opposite if hypotenuse = 10 and $\sin\theta = 0.6$
47. Find adjacent if hypotenuse = 13 and $\cos\theta = 5/13$
48. Find hypotenuse using pipe runs of 9 m and 12 m
49. Find angle if $\tan\theta = 1$
50. A roof space triangle has sides 7 m and 24 m. Find hypotenuse