CIPHE ciphe.org.uk

TEST YOUR KNOWLEDGE
COMMON PLUMBING PROCESSES



# INSTALLATION PROCESSES & TECHNIQUES

REVISION GUIDE BY JERRY WHITELEY

Technical Manager, Chartered Institute of Plumbing & Heating Engineering (CIPHE)

Knowing the right tools and techniques for the job is an essential part of being a professional installer.

**Test yourself with this fun quiz to see how well you know some of the most common installation tasks and methods.**

**Q1** Identify which tools you would use for the following tasks:

**A.** Bending a copper tube offset on-site: **Answer:** .....

**B.** Tightening a compression fitting: **Answer:** .....

**C.** Cutting Polybutylene pipe: **Answer:** .....

**D.** Taking up a floorboard: **Answer:** .....

**E.** Drilling a hole for a boiler flue: **Answer:** .....

**F.** Cutting low carbon steel pipe: **Answer:** .....

**Q2** Name two reasons for using inserts with plastic push-fit pipe:

**Answers:** .....

.....

.....

**Q3** What are the two types of capillary fittings?

**Answers:** .....

.....

.....

**Q4** What is the difference between the two types of compression fittings?

Type A: **Answer:** .....

Type B: **Answer:** .....

**Q5** What is the purpose of flux?

**Answer:** .....

.....

**Q6** What do the initials MLCP stand for?

**Answer:** .....

**Q7** What must be done every time you cut tube with a pipe slicer/tube cutter before assembly?

**Answer:** .....

**Q8** Which plastic pipe types can be solvent welded?

**Answer:** .....

**Q9** Which solvent weld plastic pipe suffers from UV degradation?

**Answer:** .....

**Q10** Why must you depth mark a press-fit joint before inserting it?

**Answer:** .....

**Q11** When working in a private dwelling, what should be your first task before beginning work?

**Answer:** .....

.....

.....

.....

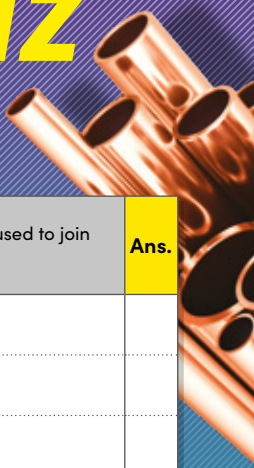
.....

.....

Go to hip-magazine.co.uk to download exercise answers for free.

# PIPEWORK QUIZ

Test your pipework knowledge by answering the following multiple-choice questions. Good luck!



| Q1 | Which of the following is not a recognised copper pipe size in the UK? | Ans. |
|---|---|---|
| A | 10mm | |
| B | 15mm | |
| C | 22mm | |
| D | 31mm | |

| Q2 | What can occur if incorrect or undersized pipework is used in a central heating system? | Ans. |
|---|---|---|
| A | Excessive streaming noise | |
| B | Cavitation of the pump | |
| C | Insufficient heat to radiators or underfloor heating | |
| D | All of the above | |

| Q3 | What is the main purpose of pipe insulation on cold water pipes? | Ans. |
|---|---|---|
| A | To make them look better | |
| B | To stop them rattling | |
| C | To prevent condensation and heat gain | |
| D | To help them bend more easily | |

| Q4 | Which of these is typically used to join copper pipe? | Ans. |
|---|---|---|
| A | Cable ties | |
| B | Compression fittings | |
| C | Wood screws | |
| D | Plastic solvent weld | |

| Q5 | What colour is usually associated with hot water pipework in a domestic setting? | Ans. |
|---|---|---|
| A | Blue | |
| B | Green | |
| C | Yellow | |
| D | Red | |

| Q6 | What tool would you use to cut a copper pipe cleanly? | Ans. |
|---|---|---|
| A | Screwdriver | |
| B | Pipe slice | |
| C | Spirit level | |
| D | Chisel | |

Go to hip-magazine.co.uk to download exercise answers for free.

CIPHE
ciphe.org.uk

TEST YOUR KNOWLEDGE
SCIENTIFIC PRINCIPLES



REVISION GUIDE BY
JERRY WHITELEY

Technical Manager, Chartered Institute of Plumbing & Heating Engineering (CIPHE)

# SCIENTIFIC PRINCIPLES

Understanding scientific principles is key to effective and safe plumbing work – from materials and forces to flow rates and temperature.

**Test your knowledge with these questions on the science behind plumbing and heating systems.**

**Q1** Name four pure metals commonly used in plumbing:

**Answers:** .....

.....

**Q2** What is an alloy?

**Answer:** .....

**Q3** Complete the following table:

| MEASURE OF | BASE SI UNIT | SYMBOL |
|---|---|---|
| Length | Metres | |
| Mass | Kilograms | |
| Time | Seconds | |
| Electric current | Ampere | |
| Thermodynamic temperature | Kelvin | |

**Q4** Natural gas has a specific gravity of 0.7 — what does this mean?

**Answer:** .....

**Q5** Polybutylene, polyethylene and polypropylene are which kind of plastic?

**Answer:** .....

**Q6** Give a brief definition of the term 'tensile strength':

**Answer:** .....

.....

**Q7** How many kilojoules would it take to heat 140 litres of water from 4°C to 80°C?

Use the formula: L × Δt × SHC of water

**Answer:** .....

**Q8** What is meant by the term 'static head'?

**Answer:** .....

**Q9** What are the three methods of heat transfer?

**Answers:** .....

.....

**Q10** Which type of hard water causes scaling in pipes?

**Answer:** .....

**Q11** What factors determine the flow rate of cold and hot water systems?

**Answers:** .....

.....

.....

.....

**Q12** Name the SI unit of force:

**Answer:** .....

Go to hip-magazine.co.uk to download exercise answers for free.

TEST YOUR KNOWLEDGE
SCIENTIFIC PRINCIPLES



# SCIENTIFIC PRINCIPLES

A good understanding of scientific principles is essential for any plumbing professional.

REVISION GUIDE BY ANDREW MACAVOY

Plumbing Tutor at Hugh Baird College

**Test your understanding of plumbing science with these multiple-choice questions.**

| Q1 | The change from water to steam is called? | Ans. |
|---|---|---|
| A | Condensation | |
| B | Evaporation | |
| C | Sublimation | |
| D | Deposition | |

| Q3 | Heat travelling through a solid substance is known as? | Ans. |
|---|---|---|
| A | Convection | |
| B | Radiation | |
| C | Conduction | |
| D | Latent | |

| Q2 | Hot water (99°C or less) expands by approximately? | Ans. |
|---|---|---|
| A | 10% | |
| B | 6% | |
| C | 15% | |
| D | 4% | |

| Q4 | What is the unit of power? | Ans. |
|---|---|---|
| A | Joules | |
| B | Amps | |
| C | Ohms | |
| D | Watts | |

| Q5 | What is natural gas commonly used for? | Ans. |
|---|---|---|
| A | Refrigeration | |
| B | Domestic heating | |
| C | Installation of plumbing systems | |
| D | Distilled into fuel oil | |

| Q8 | Temporary hard water has a pH of? | Ans. |
|---|---|---|
| A | 7 | |
| B | More than 7 | |
| C | Less than 7 | |
| D | Is acidic | |

| Q6 | Decreasing pipe diameter will? | Ans. |
|---|---|---|
| A | Increase flow, reduce velocity | |
| B | Reduce flow, increase velocity | |
| C | Increase flow and velocity | |
| D | Reduce flow and velocity | |

| Q9 | What is the boiling point of water at sea level? | Ans. |
|---|---|---|
| A | 101°C | |
| B | 99°C | |
| C | 100°C | |
| D | 69°C | |

| Q7 | What happens to refrigerant gas when it changes state? | Ans. |
|---|---|---|
| A | Changes to gas | |
| B | Changes to liquid | |
| C | Changes to solid state | |
| D | Nothing – stays the same but more compact | |

| Q10 | What is the expansion rate of water when it freezes? | Ans. |
|---|---|---|
| A | 4% | |
| B | 20% | |
| C | 10% | |
| D | 100% | |

| Q11 | What is the specific gravity of natural gas? | Ans. |
|---|---|---|
| A | 0.6–0.8 | |
| B | 0.5 | |
| C | 1 | |
| D | 1.5 | |

| Q12 | Using the formula: Specific heat (4.186) × kg × temperature rise. How much energy is required to heat 120kg of water by 50°C? | Ans. |
|---|---|---|
| A | 209.8 kJ | |
| B | 2,678.8 kJ | |
| C | 2,089.7 kJ | |
| D | 2,511.6 kJ | |

| Q13 | What is flow rate measured in? | Ans. |
|---|---|---|
| A | l/s | |
| B | $m/s^2$ | |
| C | N | |
| D | P | |

| Q14 | If water boils at 100°C, what is this in Kelvin? | Ans. |
|---|---|---|
| A | 100K | |
| B | 273K | |
| C | 373K | |
| D | 137K | |

| Q15 | If a 100-litre cistern is elevated and opened, what is the force of gravity on the water (kg × 9.81)? | Ans. |
|---|---|---|
| A | 981 | |
| B | 918 | |
| C | 990 | |
| D | 980 | |

| Q16 | If a cistern is 20 metres high, what is the water head pressure? | Ans. |
|---|---|---|
| A | 2 bar | |
| B | 1 bar | |
| C | 2.5 bar | |
| D | 20 bar | |

Go to hip-magazine.co.uk to download exercise answers for free.

TEST YOUR KNOWLEDGE
BUSINESS BASICS

# ARE YOU READY TO RUN A BUSINESS?

Good plumbing skills are just one part of being self-employed. How much do you know about working with customers, managing money and staying professional?

**Put your knowledge to the test with this multiple-choice quiz!**

| Q1 | What is a sole trader? | Ans. |
|---|---|---|
| A | Someone employed by a company | |
| B | Someone who runs a business and keeps the profits | |
| C | Someone who works with multiple business partners | |

| Q3 | What does public liability insurance cover? | Ans. |
|---|---|---|
| A | Business loans | |
| B | Injury or damage caused during work | |
| C | Staff wages | |

| Q2 | Which of the following is not usually considered a business start-up cost? | Ans. |
|---|---|---|
| A | Tools and equipment | |
| B | Marketing materials | |
| C | Personal holiday expenses | |

| Q4 | Why might you contact a customer before arriving at a job? | Ans. |
|---|---|---|
| A | To confirm the appointment or give an update | |
| B | To cancel without notice | |
| C | To ask for more money | |

| Q5 | What should you do if you accidentally cause damage at a job? | Ans. |
|---|---|---|
| A | Try to hide it | |
| B | Be honest and let the customer know | |
| C | Leave without saying anything | |

| Q6 | Why do tradespeople add a mark-up to materials? | Ans. |
|---|---|---|
| A | To reduce their income | |
| B | To cover costs and make a fair profit | |
| C | To overcharge the customer | |

| Q7 | Which of these shows good customer service? | Ans. |
|---|---|---|
| A | Being professional and respectful | |
| B | Turning up late without explanation | |
| C | Leaving tools and mess behind | |

| Q8 | Why do self-employed plumbers need van insurance? | Ans. |
|---|---|---|
| A | To insure their van | |
| B | To insure their tools and van | |
| C | To cover the customer's home | |

| Q9 | If a customer misses a payment, what's a good first step? | Ans. |
|---|---|---|
| A | Send a polite reminder | |
| B | Share their details on social media | |
| C | Leave it and hope they pay eventually | |

| Q10 | Why is it important to track income and expenses? | Ans. |
|---|---|---|
| A | To monitor profit and manage your business properly | |
| B | It isn't necessary unless you hire an accountant | |
| C | So you can take more time off | |

| Q11 | What should you wear when visiting a customer's home? | Ans. |
|---|---|---|
| A | Whatever you feel most comfortable wearing | |
| B | Clean and appropriate workwear | |
| C | A branded t-shirt and tracksuit bottoms | |

| Q12 | What can help you stay organised as a business owner? | Ans. |
|---|---|---|
| A | Leaving everything to memory | |
| B | A planner or scheduling app | |
| C | Writing notes on scrap paper | |

Go to hip-magazine.co.uk to download exercise answers for free.