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TEST YOUR KNOWLEDGE
COMMON PLUMBING PROCESSES



REVISION GUIDE BY JERRY WHITELEY

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

INSTALLATION PROCESSES & TECHNIQUES

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:** Scissor bender

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

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

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

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

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

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

Answers: 1. To keep the structural integrity of the pipe (maintain its shape)

2. To provide a more effective watertight seal

Q3 What are the two types of capillary fittings?

Answers: 1. End feed

2. Integral solder ring

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

Type A: **Answer:** Non-manipulative

Type B: **Answer:** Manipulative

Q5 What is the purpose of flux?

Answer: Fluxes are used to clean oxides from the surface of the copper and help the flow of solder into the fitting.

Q6 What do the initials MLCP stand for?

Answer: Multi-Layer Composite Pipe

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

Answer: Deburr the pipe

Q8 Which plastic pipe types can be solvent welded?

Answer: PVCu and ABS

Q9 Which solvent weld plastic pipe suffers from UV degradation?

Answer: ABS

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

Answer: So you can check it hasn't moved during installation

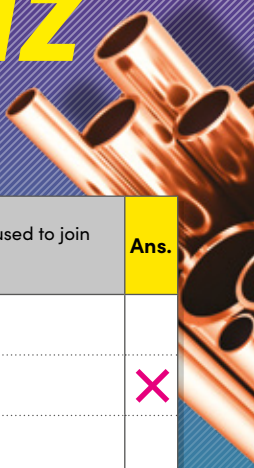
Q11 When working in a private dwelling, what should be your first task before beginning work?

Answer: Walk around the house with the customer. Point out any existing damage to furniture, fixtures, carpets, and wall coverings. This will help avoid misunderstandings about any marks or damage already in place.

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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	X

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	X

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	X
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	X
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	X

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

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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: Copper, Aluminium, Lead, Zinc, Tin and Iron

(Any four of the above are acceptable)

Q2 What is an alloy?

Answer: A mixture of two or more metals

Q3 Complete the following table:

MEASURE OF	BASE SI UNIT	SYMBOL
Length	Metres	m
Mass	Kilograms	kg
Time	Seconds	s
Electric current	Ampere	A
Thermodynamic temperature	Kelvin	K

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

Answer: It is lighter than air

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

Answer: Thermoplastics

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

Answer: The tensile strength of a material is a measure of how well or badly it reacts to being pulled or stretched until it breaks.

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: 140 × 76 × 4.187 = 44,549.68 kJ

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

Answer: The pressure exerted by water due to its mass

Q9 What are the three methods of heat transfer?

Answers: 1. Conduction, 2. Convection and 3. Radiation

Q10 Which type of hard water causes scaling in pipes?

Answer: Temporary hard water

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

Answers: Size of pipe, Length of pipe, Changes of direction, Pressure of water and Frictional resistance of the internal bore of the pipe

Q12 Name the SI unit of force:

Answer: Newton

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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	

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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	

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	

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	

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	

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	

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	

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	

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	

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