



PHCC EDUCATIONAL FOUNDATION CERTIFICATION ASSESSMENT BLUEPRINT

PHCC Educational Foundation Plumbing Year 4

Test Code: 7664

Version: 01

Specific Competencies and Skills Tested in this Assessment:

Mathematics

Measure and calculate linear distances, circles, angles, and radii
Identify common geometric shapes and compute volumes using basic geometry
Measure water weight, volume, and pressure
Calculate end-to-end and center-to-center measurements
Solve multi-step problems using basic applied formulas
Calculate grade, percent grade, drop, and run of piping

Communication Skills

Communicate with other trades and professionals
Written Communication
Display professionalism

Related Science

Define goals of plumbing, water sources and waste disposal
Understand and apply basic principles of heat transfer and combustion

General Safety Procedures

Understand and apply OSHA regulations that cover plumbing practices

Plumbing Drawings, Plans, and Charts

Interpret symbols, dimensions and placement of plumbing fixtures and piping on isometric drawing
Sketch plan view and isometric drawings using standard plumbing fixture and piping symbols
Read plan view and isometric drawings using standard plumbing fixture and piping symbols

Install Drainage, Waste, and Vent Systems

Layout and size the drainage systems
Diagnosing and repairing drainage and vent systems

Install Water Supply and Distribution Systems

Sizing the water supply systems
Roughing-in for water supply and distribution systems
Cross connections
Water and hydrostatic pressure testing
Diagnosing and repairing water distribution systems

Plumbing Year 4 continued

Fixtures, Appliances, and Equipment

Fixture rough-in
Faucets
Tubs and showers
Strainers and port openings or pop-ups
Water closets, urinals, and bidets
Trap and faucet connections
Ejector systems
Sump pumps
Handicapped-accessible fixtures
Institutional fixtures and systems
Emergency showers and eye wash stations
Commission fixture appliances and equipment
Diagnosing and repairing fixtures and appliances

Install Domestic Water Heaters

Domestic water heater components and operation
Gas water heaters
Electric water heaters
Oil water heaters
Point-Of-Use water heaters
Tankless water heaters and systems
Solar water heaters
Domestic hot water boilers
Indirect fired water heaters

Hot Water Distribution Systems

Diagnosing and repairing domestic water heating systems

Hydronic Systems

Principles of hydronic systems
Install hydronic heating systems
Hydronic heating systems startup

Fuel Gas

Demonstrate knowledge of fuel gas code, materials, and types of fuel gases
Define fuel gas pipe sizing
Define fuel gas piping, fittings, and connections
Fuel gas piping, corrosion, and corrosion protection
Diagnosing and repairing fuel gas systems

Code

Administration and basic principles, plumbing code definitions and general regulations
Materials
Joints and connections, fittings and appurtenances
Plumbing fixtures and minimum fixture requirements
Hangers and supports, indirect waste piping and special waste
Water supply and distribution
DWV and storm drain systems
Medical care facility plumbing equipment
Tests and maintenance
Individual sewage disposal systems
Potable water supply systems
Mobil home and travel trailer plumbing standards

Pumps

Hydraulic and Pump Theory
Pump types, pump uses, and piping design
Pump performance curves, installation, and maintenance

Plumbing Year 4 continued

Electrical

Demonstrate knowledge of basic electricity, electric current, and electric motors
Demonstrate knowledge of electric circuits, circuit protection, and electrical safety
Electric circuit troubleshooting
Control wiring

Backflow

Define backflow
Describe mechanical equipment for cross-connection control

Productivity

Identify factors that enhance productivity

Written Assessment:

Administration Time: 3 hours
Number of Questions: 176

Areas Covered:

9%	Mathematics
5%	Communication Skills
3%	Related Science
1%	General Safety Procedures
5%	Plumbing Drawings, Plans, and Charts
2%	Install Drainage, Waste, and Vent Systems
8%	Install Water Supply & Distribution Systems
11%	Fixtures, Appliances, and Equipment
8%	Install Domestic Water Heaters
2%	Hot Water Distribution System
4%	Hydronic Systems
10%	Fuel Gas
19%	Code
5%	Pumps
3%	Electrical
4%	Backflow
1%	Productivity

Sample Questions:

If a 6 inch building drain is run 126 feet at 1 percent grade, what is the total fall?

- A. 1.26 inches
- B. 6.3 inches
- C. 12.6 inches
- D. 15.75 inches

A grid or perforated strainer is usually required on a

- A. public lavatory
- B. pot sink
- C. residential lavatory
- D. floor sink

Plumbing Year 4 continued

What determines the firing rate of a boiler?

- A. pulverizer
- B. coal feeders
- C. water level
- D. demand on boiler

What is the appropriate colored paint to identify gas piping?

- A. yellow
- B. red
- C. orange
- D. green

Thrust blocks are required for pressure piping with _____ joints.

- A. flanged
- B. rubber ring
- C. threaded
- D. butt welded