



EDUCATIONAL FOUNDATION

## Assessment Blueprint

# PHCC Educational Foundation Plumbing Year 1



Post-Test Code: 7661

## General Assessment Information

### Blueprint Contents

General Assessment Information  
Written Assessment Information

Specific Competencies Covered in the Test  
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**Test Type:** This PHCC Educational Foundation certification assessment is a customized assessment for the Plumbing-Heating-Cooling Contractors (PHCC). This assessment measures technical skills at the occupational level and includes items which gauge factual and theoretical knowledge. This assessment offers a written component and can be used at the secondary and post-secondary levels. This assessment can be delivered in an online or paper/pencil format.

**Revision Team:** The assessment content is based on input from plumbing contractors, inspectors, and educators from the states of Maryland, New Jersey, Nevada, Ohio, Tennessee, and Virginia.



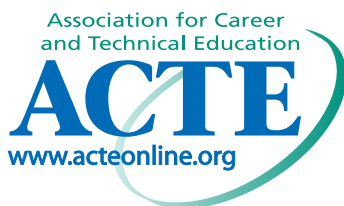
46.0503 – Plumbing  
Technology/Plumber



Career Cluster 2 - Architecture  
and Construction



47-2152.02 – Plumbers



The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!

## Written Assessment

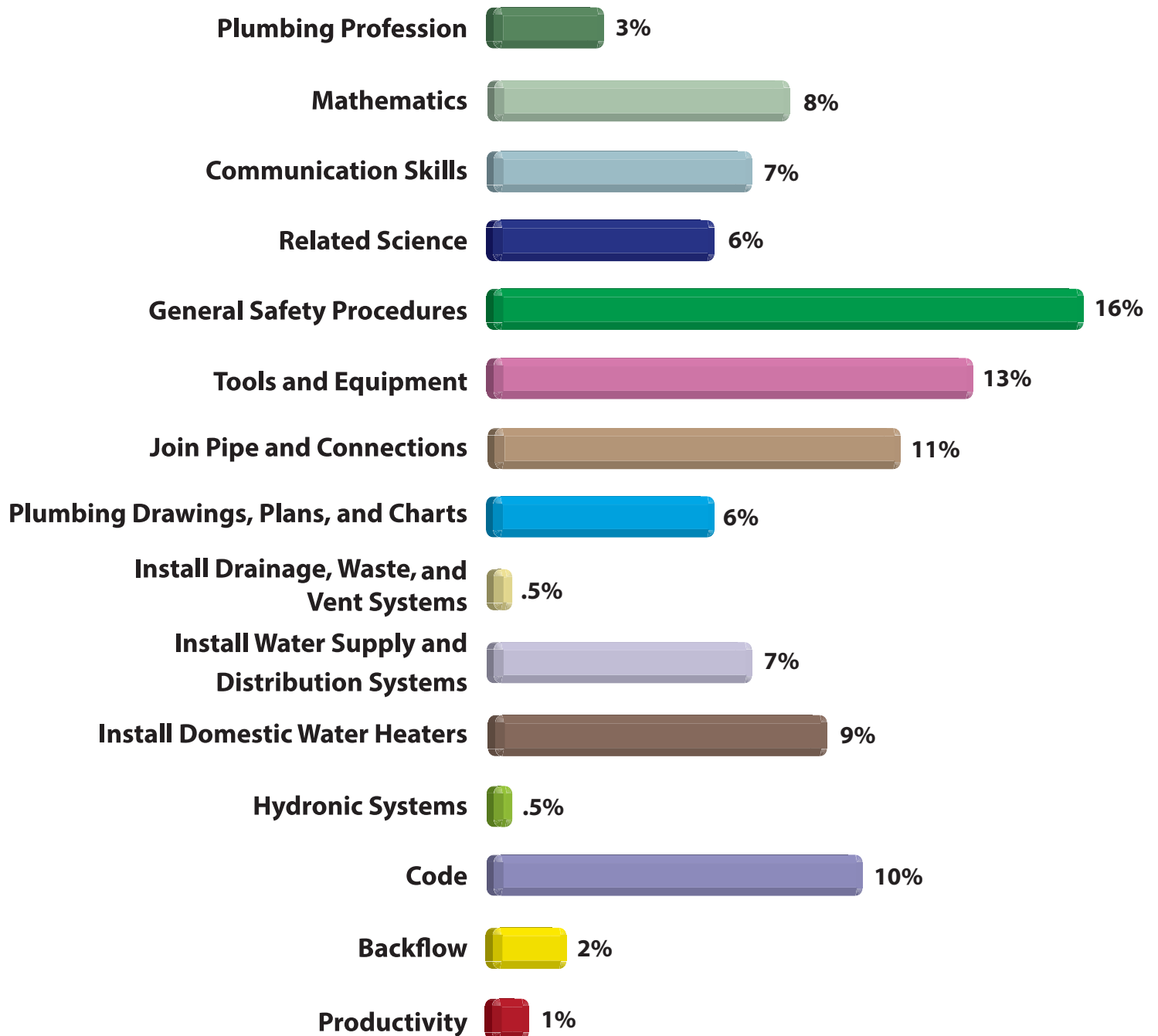
This written assessment consists of questions to measure an individual's factual theoretical knowledge.

**Administration Time:** 3 hours

**Number of Questions:** 184

**Number of Sessions:** This assessment may be administered in one, two, or three sessions.

### Areas Covered



## Specific Competencies and Skills Tested in this Assessment

### **Plumbing Profession**

- Explain history of plumbing profession
- Describe career path for plumbing professionals

### **Mathematics**

- Perform simple arithmetic functions with and without calculators
- Measure and calculate linear distances, circles, angles, and radii

### **Communication Skills**

- Communicate with customers
- Display professionalism

### **Related Science**

- Define goals of plumbing, water sources and waste disposal
- Understand and apply basic principles of matter, mass, and weight

### **General Safety Procedures**

- Understand and apply OSHA regulations that cover plumbing practices
- Apply OSHA ladder, scaffold, and man lift safety and maintenance procedures
- Apply PPE including safety glasses, electrical protection, shoes, hardhat, and other practices
- Use proper procedures to prevent, report, and respond to fire and other safety hazardous risks
- Apply brazing and soldering safety procedures to prevent fires and personal injury
- Use proper protection/procedures to avoid contamination and infection from blood-borne pathogens
- Apply safety requirements for working in confined spaces
- Understand and apply proper safety procedures when working

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## Specific Competencies and Skills (continued)

### Tools and Equipment

- Hand tools used in the plumbing trade
- Rough-In tools – copper, plastic, and soil pipe
- Rough-In tools – steel pipe
- Finish and repair tools
- Welding and power tools

### Join Pipe and Connections

- Describe and apply proper procedures for measuring and fabricating copper pipe
- Describe and apply proper procedures for measuring and fabricating and testing
- Describe and apply proper procedures for steel pipe joined with thread sealant
- Describe and apply proper procedures for measuring, fabricating, and testing cast iron pipe
- Explain factors that affect the selection of proper fittings or valves for a specific installation

### 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

- Evacuation and grade



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## Specific Competencies and Skills (continued)

### Install Water Supply and Distribution Systems

- Rough-in for water supply and distribution systems
- Cross connections
- Water hammer arrestors
- Water and hydrostatic pressure testing
- Water supply sources
- Private water systems
- Water meters

### 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



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## Specific Competencies and Skills (continued)

### Hydronic Systems

- Test integrity of hydronic heating water circuits

### 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
- Tests and maintenance
- Individual sewage disposal systems
- Potable water supply systems

### Backflow

- Define backflow
- Describe mechanical equipment for cross-connection control

### Productivity

- Identify factors that enhance productivity



## Sample Questions

**A skilled technician who is able to work alone and make decisions about how to proceed with the work is referred to as a**

- A. journeyworker
- B. foreman
- C. superintendent
- D. contractor

**To convert decimals of a foot to inches, multiply by**

- A. .10
- B. 10
- C. 12
- D. 100

**The term "communication" is defined as**

- A. an exchange of information
- B. showing respect for authority
- C. developing goodwill in public relations
- D. action taken to promote goodwill

**Approximately \_\_\_\_\_ of the earth's surface is covered by water.**

- A. 10 percent
- B. 25 percent
- C. 50 percent
- D. 75 percent

**The federal law that covers safety in the work place is**

- A. ESCA
- B. ACCA
- C. OSHA
- D. RSES

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### Sample Questions (continued)

**What type of pipe is used by a snap chain cutter?**

- A. cast iron
- B. brass
- C. copper
- D. concrete

**Which of the following joining methods is most commonly used to join galvanized pipe?**

- A. brazing
- B. compressing
- C. flaring
- D. threading

**Tubing cut with a cutting tool must be reamed in order to**

- A. clean the tubing
- B. remove burrs
- C. thin the tubing
- D. make the end round

**A low pressure hot water heater boiler is \_\_\_\_\_ or less.**

- A. 10 psi
- B. 15 psi
- C. 160 psi
- D. 200 psi

**A water closet seat should be sized for the**

- A. tank
- B. bowl
- C. floor
- D. water supply

