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## **Plumbing Advanced**

## General Assessment Information

### Blueprint Contents

General Assessment Information  
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**Test Type:** This certification assessment is a customized assessment for the Home Builders Institute. This assessment measures technical skills at the occupational level and includes items which gauge factual and theoretical knowledge. This assessment offers both a written and performance component and can be used at the secondary level and postsecondary level. This assessment can be delivered in an online or paper/pencil format.

**Revision Team:** The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the state of Arizona, California, Indiana, Maryland, North Carolina, Pennsylvania, South Carolina, Tennessee, and Washington.



46.0503 – Plumbing  
Technology/Plumber



Career Cluster - 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!



The Home Builders Institute (HBI) trains skilled workers for the building industry. Through pre-apprenticeship training, certification programs and job placement services, HBI provides graduates with the skills and experience they need to build a career and change their lives. HBI assessments, in partnership with the National Association of Home Builders (NAHB), are based on national skills standards set by industry professionals and educators. Participants passing the assessments are eligible for certification through HBI/NAHB at the entry, semi-skilled, or skilled levels.

Selection of curricula and instructional materials chosen to support assessment achievement must be obtained from material that has been aligned to the Residential Construction National Skill Standards and approved by HBI. For a current listing, please go to <http://www.hbi.org/curriculum/>

Visit [www.hbi.org](http://www.hbi.org) for more information.

## Written Assessment

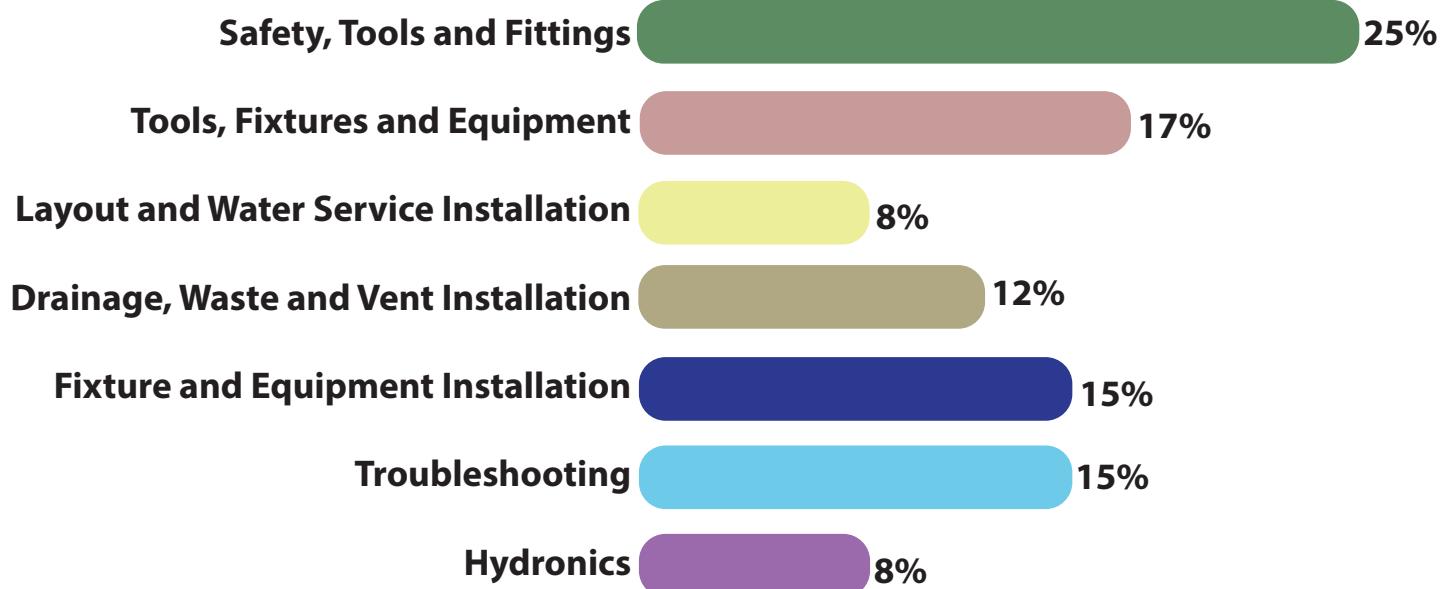
This written assessment consists of questions to measure an individual's factual theoretical knowledge.

**Administration Time:** 60 minutes

**Number of Questions:** 65

**Number of Sessions:** This assessment may be administered in one session.

### Areas Covered



## Specific Competencies and Skills Tested in This Assessment

### Safety, Tools and Fittings

- Safety, SDS Chemicals, Ladders, Torches, PEX Fittings, Water Shutoff, Backflow Protection, Harmful Sewer Gases, Water Hammer, Waste Water, and Unprotected Blades

### Tools, Fixtures and Equipment

- Drill Chuck, Power Tools, Wrenches, Bushings, DWV Systems, Angular Measurement, Faucets and Drains, Water Saving Toilet, Appliances, and Hot Water Heater

### Layout and Water Service and Installation

- Blueprint, Water Supply, and Water Distribution

### Drainage, Waste and Vent Installation

- DWV, Vents, Sizing, and Traps

### Fixture and Equipment Installation

- Fix and Equipment, Appliances, Faucets/Drains, and Install Plastic Pipe

### Troubleshooting

- Water Heater Electric, Well Pump, and Toilets

### Hydronics

- Fundamentals, Install/Start, Piping, and Radiant Heat



## Sample Questions

**Which of these is an example of fall protection equipment?**

- A. Ladder tie-ins
- B. Safety shoes
- C. Sky hooks
- D. Safety harness

**A thermocouple senses the heat from which of these?**

- A. Burner assembly
- B. Pilot flame
- C. BTU
- D. Flue pipe

**Which of these must be installed at the base of every waste stack?**

- A. A relief vent
- B. A branch vent
- C. A fixture drain
- D. A cleanout

**Where does a loop vent terminate?**

- A. A branch vent
- B. A waste stack
- C. A stack vent
- D. A relief vent

**Which of these occurs when the pressure in the boiler drops too low?**

- A. The water-regulating valve opens.
- B. The pressure relief valve opens.
- C. The supply feed valve closes.
- D. The balancing valve closes.



## Performance Assessment

This performance assessment allows individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

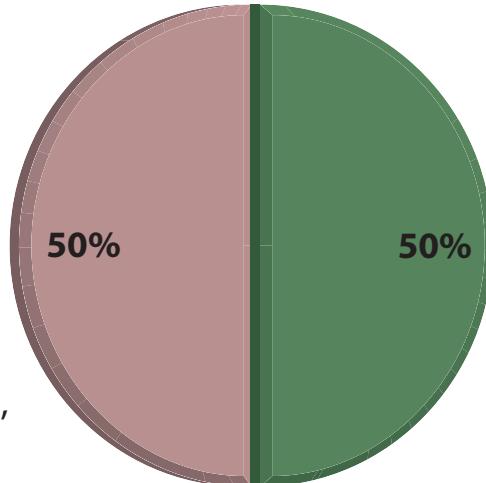
**Administration Time:** 3 hours

**Number of Jobs:** 2

### Areas Covered:

#### **50% Install and Prepare to Leak Test a DWV System**

Selection of tools/materials, safe handling of tools and equipment, rough-in: lavatory #1 (vertical and horizontal), rough-in lavatory #2 (vertical and horizontal), techniques for joining pipe and fittings, installation techniques, accuracy of fittings chosen, workstation left in good condition, adhere to local plumbing code, leak test, and time to complete Job 1.



#### **50% Install and Prepare to Leak Test a Water Supply System**

Selection of tools/materials, safe handling of tools and equipment, rough-in: lavatory #1 (vertical and horizontal), rough-in lavatory #2 (vertical and horizontal), techniques for joining pipe and fittings, installation techniques, accuracy of fittings chosen, workstation left in good condition, adhere to local plumbing code, leak test, and time to complete Job 2.

## Sample Job

### Install and Prepare to Leak Test a Water Supply System

**Maximum Time:** 1 hour and 30 minutes

**Participant Activity:** The participant will study a rough-in sketch and drawings to install a water supply system, measure and cut the pipe to correct size, connect all pipe and fittings per rough-in dimensions, install appropriate nail plates, and prepare the system for leak testing.

