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# Plumbing

## General Assessment Information

### Blueprint Contents

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**Test Type:** The Plumbing assessment is included in NOCTI's Teacher assessment battery. Teacher assessments measure an individual's technical knowledge and skills in a proctored proficiency examination format. These assessments are used in a large number of states as part of the teacher licensing and/or certification process, assessing competency in all aspects of a particular industry. NOCTI Teacher tests typically offer both a written and performance component that must be administered at a NOCTI-approved Area Test Center. Teacher assessments can be delivered in an online or paper/pencil format.

**Revision Team:** The assessment content is based on input from subject matter experts representing the following states: Connecticut, Michigan, Pennsylvania, and Tennessee.



46.0503 - Plumbing  
Technology/Plumber



Career Cluster 2-  
Architecture and  
Construction



47-2152.02 - Plumbers

## Written Assessment

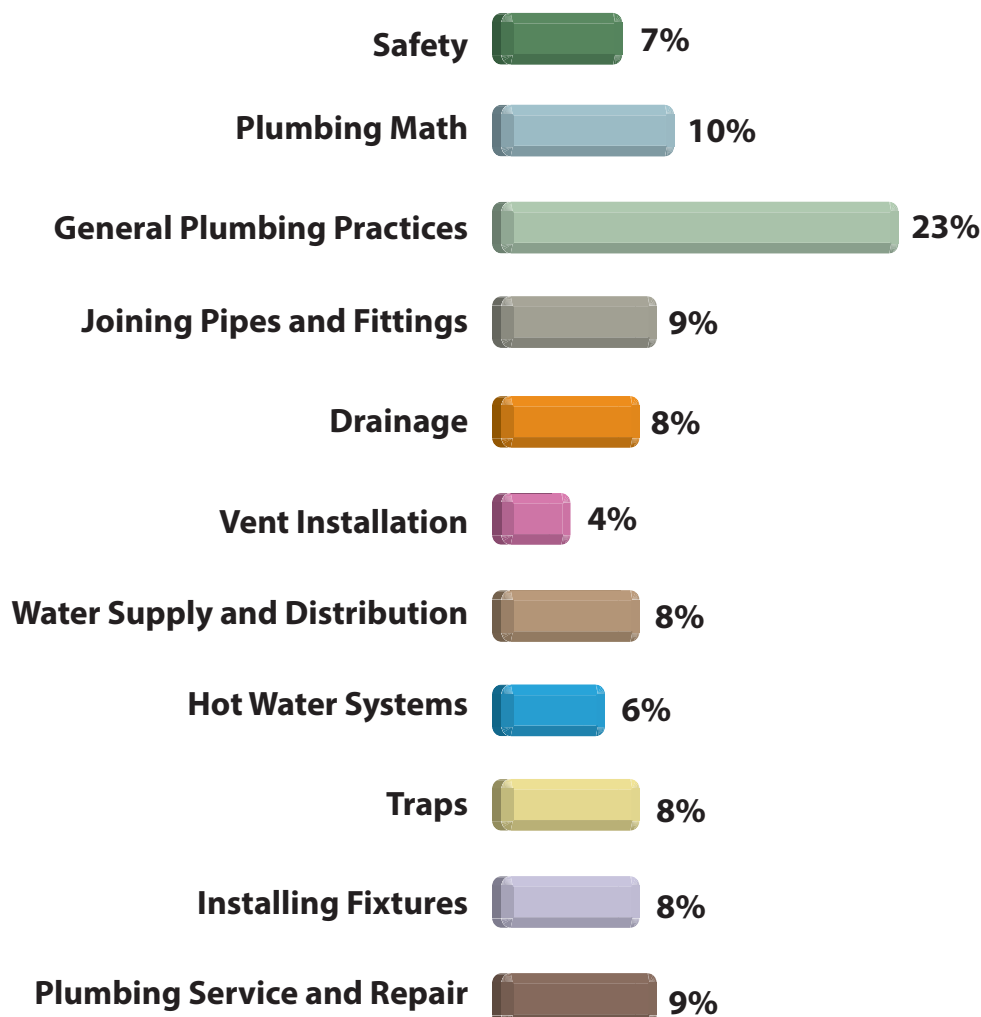
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

**Administration Time:** 3 hours

**Number of Questions:** 168

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

### Areas Covered



## Specific Standards and Competencies Included in this Assessment

### Safety

- Demonstrate personal safety, including PPEs
- Demonstrate work environment safety
- Demonstrate tool safety
- Demonstrate proper trenching methods

### Plumbing Math

- Use formulas
- Add, subtract, multiply, and divide whole numbers and fractions
- Convert measurements
- Calculate slope and angles with a builder's level/laser
- Size drain/waste lines and storm drains

### General Plumbing Practices

- Identify and use plumbing tools
- Demonstrate blueprint reading
- Interpret an isometric view of a drain, waste, and vent (DWV) system
- Identify plumbing materials and fittings
- Identify plumbing pipe protection methods (i.e., fire caulk, nail plates)
- Interpret and comply with general plumbing practices
- Interpret manufacturer's specifications
- Testing of plumbing systems
- Identify plumbing terminology
- Identify plumbing symbols



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## Specific Standards and Competencies (continued)

### Joining Pipes and Fittings

- Join copper pipe, tubes, and fittings
- Join plastic pipes, tubes, and fittings
- Join steel pipes and fittings
- Join cast iron pipes and fittings
- Join dissimilar materials

### Drainage

- Install drain/waste lines and storm drains (i.e., interior and exterior)
- Describe sizing of basic drainage systems
- Calculate proper pitch
- Describe purpose and appropriate locations for clean-out

### Vent Installation

- Install a vent system for soil or waste drainage
- Differentiate between types of vents and venting systems

### Water Supply and Distribution

- Layout/rough-in water service and distribution lines
- Install water lines, including water hammer arrestors and/or air chambers
- Identify various valve types and required locations
- Identify cross-connection and back-flow devices and functions

### Hot Water Systems

- Install basic types of water heaters (i.e., electric and gas)
- Install and identify purpose of pressure/temperature relief valve on a water heater
- Identify water heater components (i.e., electric and gas)
- Display proper venting of a gas water heater

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## Specific Standards and Competencies (continued)

### Traps

- Exhibit knowledge of trap function, installation, and placement
- Distinguish between approved and non-approved traps
- Identify trap components
- Identify causes and prevention for trap seal loss

### Installing Fixtures

- Install kitchen and lavatory fixtures
- Install water closets
- Install bathtub/shower
- Install faucets
- Install urinals

### Plumbing Service and Repair

- Repair washer and washerless type faucets
- Display ethical practices in service and repair
- Replace ball cocks and flush valves
- Unclog drains and traps
- Replace kitchen plumbing appliances



## Sample Questions

**When making a 20-inch offset in a 2-inch waste stack using DWV tubing and 45-degree fittings, the length of tubing between the two fittings is (allow 3/4-inch takeoff for each fitting; figure to closest 1/4-inch)**

- A. 24-3/4 inches
- B. 25-7/8 inches
- C. 26-3/4 inches
- D. 28-1/4 inches

**A/An \_\_\_\_\_ drawing can show both vertical and horizontal pipe clearly in a single view.**

- A. isometric
- B. geometric
- C. orthographic
- D. oblique

**The most common material used to manufacture water closets is**

- A. stainless steel
- B. reinforced fiberglass
- C. enameled cast iron
- D. vitreous china

**To ensure proper installment of plastic pipe after it is cemented, the plumber must**

- A. insert pipe into fitting and twist repeatedly
- B. insert pipe into fitting and turn 1/4 turn and hold
- C. allow cement to set first and then insert pipe into fitting
- D. insert pipe into fitting and then re-cement the outside of pipe and fitting

**When two different water supplies are connected and one of the supplies is of a questionable nature, the plumber must install a**

- A. pressure and temperature device
- B. gate valve
- C. globe valve
- D. backflow prevention device

## Performance Assessment

NOCTI performance assessments allow 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

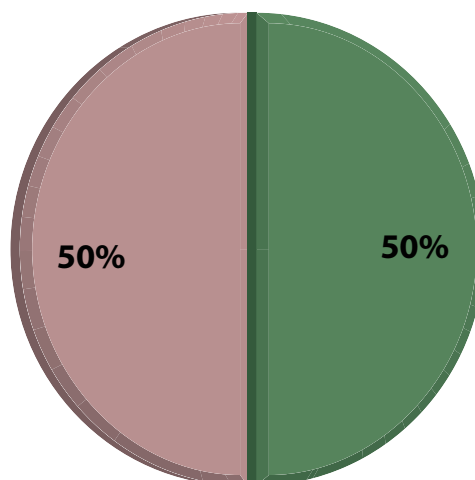
### Areas Covered:

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

Participants will select tools and materials and safely handle them to rough in lavatories 1 & 2, properly join pipe and fittings, install accurate fittings, leave workstation in good condition, adhere to the local plumbing code and perform a leak test.

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

Participants will select tools and materials and safely handle them to rough in lavatories 1 & 2, properly join pipe and fittings, install accurate fittings, leave workstation in good condition, adhere to the local plumbing code and perform a leak test.





## 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.

