

Plumbing

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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

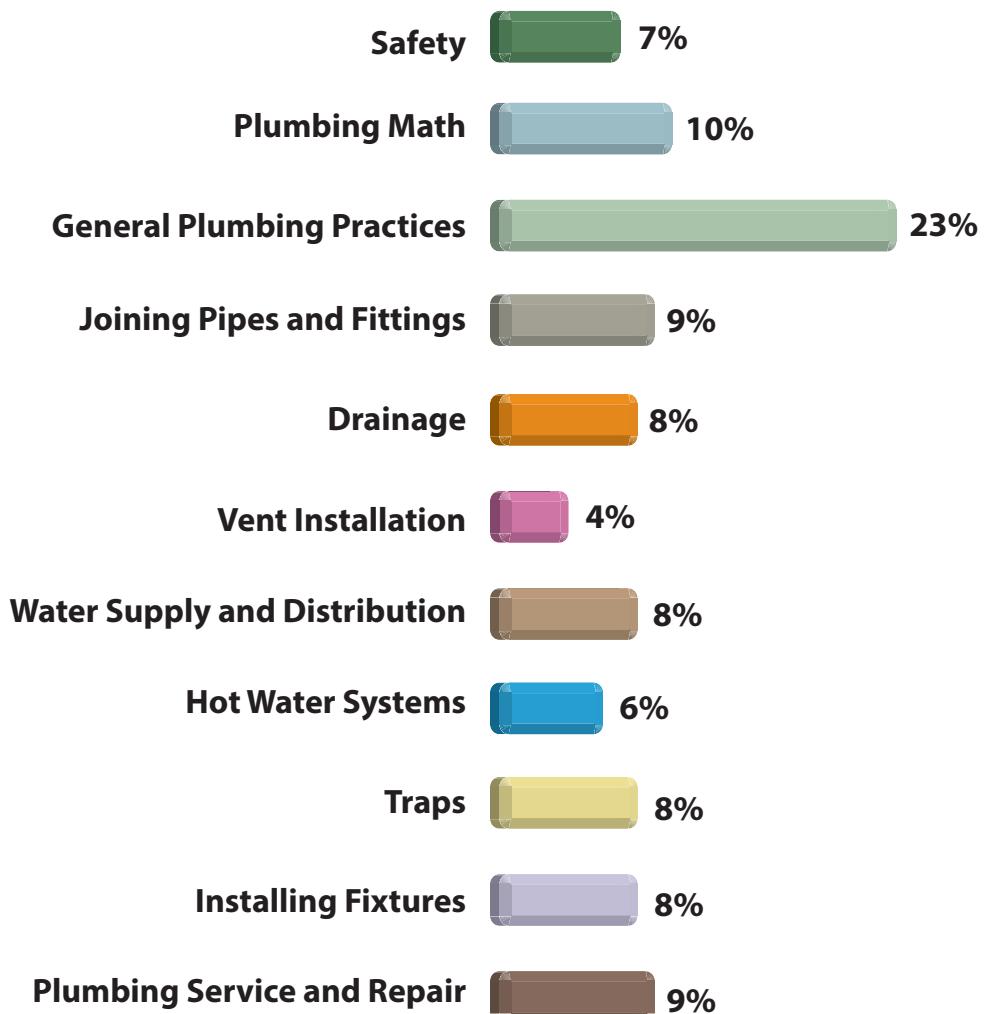
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

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

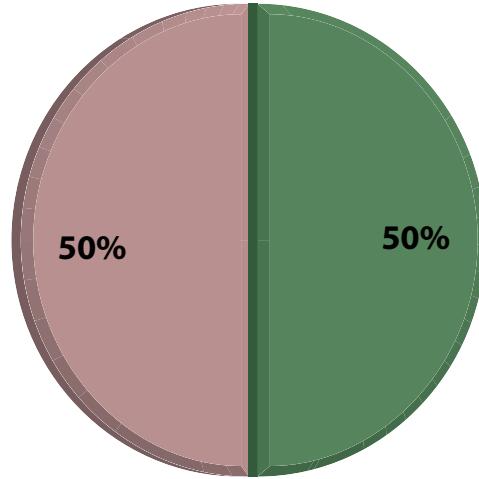
Areas Covered:

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.

