

Texas State Board of Plumbing Examiners
Tradesman Plumber-Limited Licensee
Examination Review Course

The following Examination Review Course is designed to assist a registered Plumber's Apprentice in preparing for the Tradesman Plumber-Limited Licensee examination.

When Should Examination Preparation Begin?

An individual who wishes to become licensed as a Tradesman Plumber-Limited Licensee should begin preparing for the required examination when the individual registers with the Texas State Board of Plumbing Examiners (Board) as a Plumber's Apprentice and begins his or her first day of the required 4,000 hours of on-the-job training under the supervision of licensed plumbers. While training on the job, the Plumber's Apprentice should gain knowledge of the proper preparation and assembly of plumbing materials as well as how the entire plumbing system for a one-or-two-family dwelling should be installed. This knowledge is gained from the licensed plumbers who work with, train and supervise the Plumber's Apprentice and should always comply with the recommendations of the manufacturers of the plumbing materials, the requirements of the adopted plumbing code and local ordinances.

- In addition to the knowledge gained from his or her 4,000 hours of on-the-job training under licensed plumbers, the Plumber's Apprentice should begin studying the Plumbing License Law, rules of the Texas State Board of Plumbing Examiners and the:
- **2012 International Residential Code**, English and Spanish editions available by calling 800-786-4452 or website address is www.iccsafe.org/

What to Expect From the Examination

The Plumber's Apprentice will be tested on his or her knowledge and understanding of the proper installation of one-family and two-family dwelling plumbing systems. The examination relates to work performed and decisions made on the job by a Tradesman Plumber-Limited Licensee. The examination consists of:

- eighty-five (85) written multiple choice questions;
- "hands-on" shop work, including measuring, cutting, assembly and fitting of commonly used plumbing pipe and fittings (solvent cemented PVC, soldered copper, threaded steel, and compression band type cast iron); identifying proper and improper installation of water heaters; and
- design of a two story sanitary drainage and vent system of up to 10 common plumbing fixtures and the installation of the designed system into a scaled down model of a two story one-or-two family dwelling, using miniature pipe and fittings.

How to Study the Plumbing Codes

The examination contains only questions pertaining to plumbing of one-and-two family dwellings. Knowledge of commercial plumbing systems is not required for the Tradesman Plumber-Limited examination.

In some instances, a plumbing code may refer to a manufacturer's recommendations on a particular subject. For the purposes of the examination, the Plumber's Apprentice needs to be familiar with the manufacturer recommendations for the installation of solvent cemented P.V.C. joints, steel pipe threaded/screwed joints, soldered copper joints and compression band type cast iron joints. These manufacturer recommendations are found in the form of the manufacturer instructions for the assembly of the particular product. For example, the label on most cans of P.V.C. primer and solvent cement have instructions for the proper preparation of the pipe and application of the primer and solvent cement. Manufacturer recommendations are also found on the labels of most pipe joint compounds for threaded/screwed joints and soldering fluxes for copper soldered joints. Manufacturer recommendations for compression band type cast iron joints are supplied with the bands or from the supplier or manufacturer.

The plumbing codes are separated into chapters according to subjects. Some subjects are covered in more than one chapter, depending on which code is chosen to study. For example, installation of methods for plumbing materials are generally covered in the General Regulations chapter, but more specific methods for installing solvent cemented P.V.C. water pipe, may be found in the chapter on Water Supply and Distribution.

When preparing for the examination, the Plumber's Apprentice should pay particular attention to the following chapters and subject matter listed under each chapter:

Chapter on Definitions

Studying a plumbing code should begin with learning and understanding the proper plumbing terms and their meanings found in the chapter on definitions. When the proper terms and their meanings are known and understood, the Plumber's Apprentice will find the other chapters in the plumbing code much easier to understand. The plumbing codes use only correct plumbing terms and do not contain any slang terms. Since the examination is based on the plumbing codes, only correct terms are used in the examination.

A Sample Question from the Tradesman Plumber-Limited Examination:

A vertical vent pipe installed to provide circulation of air to and from any part of the drainage system is known as a/an:

- A. individual vent
- B. vent stack
- C. combination waste and vent
- D. wet vent

Chapter on General Regulations or General Requirements

The chapter on general regulations or general requirements, generally addresses the requirements for the installation of plumbing. Some of the subjects in this chapter may be more specifically addressed in the other chapters of the code. Some of the subjects covered in this chapter include:

- types of materials and fixtures which may and may not be used;
- installation methods which may and may not be used;
- protection of piping from corrosion, stress, freezing and physical damage;
- proper bedding, support and protection of pipe installed in trenches and tunnels;
- limitations on cutting, notching and boring of the building structure;
- required types and methods of testing and inspection of the plumbing system.

A Sample Question from the Tradesman Plumber-Limited Examination:

Pipe, fittings, traps, fixtures, material or devices used in a plumbing system shall be:

- A. painted blue to indicate waste
- B. dyed
- C. marked with identification of the manufacturer
- D. colored

Chapter on Plumbing Fixtures

The chapter in the codes on plumbing fixtures addresses the approved types and sizes of fixtures, faucets and fixture fittings and their installation. Some of the subjects covered in this chapter are:

- water closets, bidets, lavatories, bathtubs, showers, sinks, automatic clothes washers, dish washers, food grinders;
- fixture fittings and accessories, such as p-traps, tailpieces, slip joint connections, flush valves and overflows in water closet tanks.

A Sample Question from the Tradesman Plumber-Limited Examination:

Concealed slip joint connections on fixtures shall be:

- A. plastic
- B. prohibited
- C. made with pipe dope
- D. accessible

Chapter on Water Heaters

The chapter on Water Heaters addresses the installation of water heaters, including the required connections, valves and safety devices. The chapter in the codes on fuel gas, also address many requirements for water heater installation and venting. Some of the subjects addressed in the chapter on Water Heaters are:

- approved locations of water heaters
- supply valves
- pressure and temperature relief valves and drains
- drain pans

During the examination, the Plumber's Apprentice will view several water heater installations. Each water heater installation will be numbered. Each water heater will have the manufacturer's warning and statistical labels affixed to the water heater. Each water heater installation will contain some code violations, which must be identified by the Plumber's Apprentice.

A Sample Question from the Tradesman Plumber-Limited Examination:

The gas shutoff valve on water heater #1 must be of an approved type and installed:

- A. less than 3 feet from the water heater and in the same room
- B. more than three feet from the water heater and down stream of a union
- C. more than three feet from the water heater in an adjoining room

- D. less than 5 feet from the water heater in an adjoining room

Chapter on Water Supply and Distribution

The chapter on water supply and distribution address materials and installation of hot and cold water supply and distribution systems. Some of the subjects covered in this chapter are:

- cross-connection contamination prevention, including vacuum breakers and air gaps;
- approved materials for water supply piping
- required methods for installation of water piping, including threaded, solvent cement and solder joints

A Sample Question from the Tradesman Plumber-Limited Examination:

To prevent turbulence and flow loss, piping must be:

- A. insulated
- B. all stainless steel
- C. reamed to full bore
- D. sleeved

Chapter on Sanitary Drainage

The chapter on sanitary drainage addresses the materials and installation of sanitary drainage piping systems. Some of the subjects covered in this chapter are:

- approved and prohibited materials for sanitary drain piping;
- required methods for installation of drainage piping, including solvent cement joints;
- required distance between building drain and water service
- required locations of cleanouts
- testing of sanitary drainage piping

A Sample Question from the Tradesman Plumber-Limited Examination:

Horizontal drainage piping 2 inches or less in diameter shall be installed with a fall of not less than ____ of an inch per foot.

- A. 3/4
- B. 1/2
- C. 1/4
- D. 1/8

Chapter on Vents

The chapter on vents addresses the materials and installation of vent systems, which allow the sanitary drainage system to operate properly. Some of the subjects covered in this chapter are:

- the purpose of properly installed vent systems
- the different vent types and components which create a complete vent system
- vent terminals
- grading of vents
- connection of vent piping to sanitary drainage piping
- wet venting on the same floor versus wet venting one floor above another

A Sample Question from the Tradesman Plumber-Limited Examination:

Horizontal vent pipes shall be level or graded as to drip back by gravity to:

- A. the main vent pipe
- B. the main soil stack
- C. the loop vent
- D. the soil or waste pipe that it serves

Chapter on Traps

The chapter on traps addresses the materials and installation of traps in the sanitary drainage system. Some of the subjects covered in this chapter are:

- design of different types of traps
- fixture traps
- protection of trap seals
- prohibited traps

A Sample Question from the Tradesman Plumber-Limited Examination:

In a vertical stack, the use of a wye and 1/8 bend for a trap connection could create:

- A. an airlock
- B. back pressure
- C. an "S" trap
- D. backflow

Chapter on Fuel Gas or Fuel Piping

The chapter on fuel gas or fuel piping addresses the pipes, valves, fittings and installation of those materials used for supplying fuel gas to water heaters and appliances. The subjects covered in this chapter that the Plumber's Apprentice should be knowledgeable of are:

- the different types of fuel gasses
- approved and prohibited materials for fuel gas piping
- testing of fuel gas systems

The Plumber's Apprentice should also know that in order to install liquefied petroleum (L.P.) gas, a separate license issued by the Texas Railroad Commission must first be obtained by anyone who installs L.P. gas piping.

A Sample Question from the Tradesman Plumber-Limited Examination:

Which test medium cannot be used for testing a fuel gas system?

- A. Air
- B. Oxygen
- C. Nitrogen
- D. Carbon dioxide

How to Study the Plumbing License Law and Board Rules

The Plumbing License Law and Board Rules contain the regulations for persons who work in the plumbing industry to follow. The Plumber's Apprentice should be familiar with all of these regulations. However, for the purposes of preparing for the Tradesman Plumber-Limited examination, the Plumber's Apprentice should study the **Plumbing License Law, Sections** 1301.351, 1301.356, 1301.403, 1301.404, 1301.452, 1301.502, 1301.508, 1301.701, 1301.702 and the **Board Rules, Sections** 361.1, 365.1, 367.2, 367.4, 367.5 and 367.7.

The Plumbing License Law and Board Rules are available on the Texas State Board of Plumbing Examiners website at www.tsbpe.state.tx.us, or by calling the Board's office at 512-936-5200.

A Sample Question from the Tradesman Plumber-Limited Examination:

At least six hours of Board approved continuing professional education is required of:

- A. anyone who fails an examination
- B. anyone who fails an examination more than once
- C. any licensee who has held a license for more than five years
- D. any licensee who wishes to renew a license

How to Apply to Take the Tradesman Plumber-Limited Examination

Once the Plumber's Apprentice has:

- met the minimum 4,000 hours of work experience; and
- has gained the knowledge of the proper preparation and assembly of plumbing materials as well as how the entire plumbing system for a one-or-two-family dwelling should be installed, the Plumber's Apprentice may apply to take the Tradesman Plumber-Limited examination by submitting to the Board, completed:
 - Tradesman Plumber-Limited examination application form;
 - Employer Certification form (verifying work experience);
 - the examination fee; and
 - other documentation detailed on the examination application form.

All forms are available on the Texas State Board of Plumbing Examiners website at www.tsbpe.state.tx.us, or by calling the Board's office at 512-936-5200.