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PLUMBER'S EXAM PREPARATION GUIDE

by Howard C. Massey



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Acknowledgements

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International Association of Plumbing and Mechanical Officials 4755 E. Philadelphia St. Ontario, California 91761

National Fire Protection Association, Inc. Batterymarch Park Quincy, Massachusetts 02269

Southern Building Code Congress International, Inc. 900 Montclair Road Birmingham, Alabama 35213

Portions of the *Standard Plumbing Code* and *Standard Gas Code* have been reprinted. The reprinted material is not necessarily complete, nor is it the official position of the Southern Building Code Congress International.

To my wife, Hilda, for her encouragement and participation that helped to make this book possible, and to my son, Richard, who is carrying on the family plumbing tradition.

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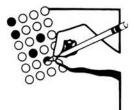
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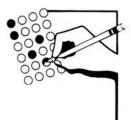
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Introduction — How to Use This Book



I hope you've picked up this book because you're looking for a good-paying career as a licensed journeyman or master plumber. That's exactly my goal: to launch your career by helping you get licensed. This book has the information you need to pass a plumbing exam based on either of the two popular national codes.

If you've been installing plumbing systems for years as an unlicensed plumber, this book is for you. There's no need to work under the handicap of not having a license. The information between the covers of this book will cover every subject that's likely to be on most plumbing exams.

If you're just starting as an apprentice plumber, this book is also for you. It begins at the beginning. You'll have no trouble understanding what's explained here. Read carefully and you'll soon earn the recognition that licensed professionals are entitled to in modern society.

In most communities, any plumber working without supervision must be licensed. Many states now require the certification of journeyman plumbers as well as specialty plumbers. This trend is sure to continue as legislatures recognize the need to protect the public from charlatans and the incompetent.

Let me issue a caution right at the beginning. Don't let anyone convince you that studying for a plumbing exam is a waste of time. It isn't. Most licensing authorities prepare demanding exams that are a good test of the examinee's knowledge. These exams guarantee that plumbing installed in modern buildings will meet minimum standards for protecting the lives and health of building occupants for many years.

If you don't believe that slipshod plumbing and haphazard sanitary systems can be a major health menace, you haven't traveled in foreign countries where plumbers are neither licensed nor held to reasonable standards of competence.

Begin your study for the exam with two points in mind. First, you're going to take the exam seriously. You'll pass, but only if you study carefully each of the questions and answers in this book. Second, every minute you spend studying this book is a minute well spent. What you learn for the exam is the foundation on which your professional career will be built.

Understand also that the licensing authority isn't the enemy. They aren't trying to keep you out of the plumbing profession. They only want to set some basic standards. The public should be assured that all licensed plumbers are knowledgeable professionals. That's good for society in general, and it's good for all professional plumbers who live and work in your community.

Before I go any farther, let me offer some information on my background. I've been an apprentice, journeyman and master plumber. For 15 years I ran my own plumbing contracting company. For 14 years I was assistant plumbing chief and plans examiner for a building department. I've helped write, monitor and grade plumber's exams. I have a pretty good idea of what you need to know to pass the exam.

Unfortunately, I see far too many applicants who are not well prepared when they sit down to take the test. Let me make this clear — taking the test without doing a good job of preparation is a complete waste of time — both yours and that of the licensing authority. The results are predictable. Don't make that mistake.

The most common reason for failure is that the applicant didn't study properly because he didn't know how, or studied the wrong material. This book should forever put an end to that excuse. You have in your hands the most complete, easiest-to-use, most practical reference available for preparing to take the tests that are actually given today. Read this book carefully, examine every question, understand all the answers. Do this, and there's no way you'll be unprepared on examination day.

All the common questions and answers are here, of course. But just knowing the answer isn't always enough. Sometimes it's just as important to understand *why* a particular answer is correct. That's why many answers include a quotation from the appropriate code reference. Sometimes the correct answer depends on which code is being used in the jurisdiction. If that's the case, I've given the correct answer for each of the two popular national codes. And sometimes you'll find notes or clarifications under the answer when there's an important point you might miss.

What to Expect

There was a time when a few years of experience and some knowledge of the gas and local plumbing code were almost enough to guarantee a passing grade. The old tests were usually closed book exams. No reference materials were permitted in the examination room. These tests evaluated the applicant's memory of the code and his ability to illustrate and design plumbing systems. That wasn't necessarily the best way to test a plumber's knowledge. No plumber has to work completely without reference books. Memorizing code sections isn't practical. It's also important that you know where to find an answer and have the background to interpret what the reference book says.

Today, you'll probably take an open book exam which asks you to solve practical problems and answer questions from recommended references. That's closer to the type of problems plumbers face every day in their work. Speed in locating the right reference for each question (and making the correct interpretation) is essential.

Most questions given on exams are based on the local plumbing and gas codes. Other test questions will likely be taken from references recommended by the examining authority. You'll probably receive a list of approved references when you apply to take the exam. These approved references are the only books allowed in the examination room.

The following is a typical list of approved references for a journeyman plumber's exam. But this is an *example only*. Make sure you use the actual list recommended by *your* testing authority.

Your local plumbing code, plus any applicable ordinances and amendments.

NFPA Pamphlet No. 54, Gas Appliances and Gas Piping NFPA Pamphlet No. 14, Standpipe and Hose Systems Plumbing, by H.E. Babbitt Plumber and Pipe Fitters Library Mathematics for Plumbers and Pipefitters Plumbing 1, by Harry Slater Related Information Plumbing 2, by Harry Slater

Blueprint Reading for Plumbers, Residential and Commercial

Plumbing Installation and Design

Student Guide for Plumbing Installation and Design

The master's exam list will be longer and includes several subjects that aren't covered in the references listed above.

Getting the Right Books

Get all the recommended references as soon as possible. If you live within driving distance of a well-stocked technical bookstore, they'll probably have most or all of what you need. Smaller general bookstores usually don't stock many technical books. But they may have *some* of the listed titles. Most bookstores are willing to special order books for you, but you'll have to wait four to six weeks for them to arrive.

Remember that books and pamphlets used to improve or maintain your professional skills are deductible on your income tax return. They're also valuable references even after you've passed the exam. Don't be afraid to spend what's needed to get the recommended books. They'll be a good investment.

Codes and Standards

At the present time, three major plumbing codes regulate all the plumbing systems in the United States: the International Plumbing Code, the Uniform Plumbing Code, and the Standard Plumbing Code. In the northeastern United States, the International Plumbing Code has recently replaced the BOCA Code. The three model codes are written by private organizations that have some interest in improving standards in the plumbing industry. By themselves, these model codes are not the law. They're written in hopes that some city, county or state will adopt them as a regulation. When your city, state or county does adopt a model code, it becomes the authority for all plumbing work done in that jurisdiction.

Of course, the code adopted is entirely up to the governing authority in your city, county or state. And that branch of government is free to amend, delete, or supplement the code that's actually adopted — and many do. Almost all plumbing codes in the United States are "referral codes." They refer to other standard references when describing materials and design procedures. For example, every model plumbing code includes a table which lists all the plumbing materials acceptable for use within the jurisdiction. The *Standard Plumbing Code* states, "Plumbing fixtures shall be constructed from approved materials, have smooth impervious surfaces, be free from defects and concealed fouling surfaces, and shall conform to the standards listed in Table 500." The standards for plumbing fixtures as listed in Table 500 were developed by the *American National Standards Institute, Inc.* (ANSI).

You'll see many references like that in your plumbing code. The Standard Plumbing Code lists 31 separate standards in the plumbing section alone. A few of these references are ANSI (mentioned above), ASTM (American Society for Testing and Materials), CISPI (Cast Iron Soil Pipe Institute), FS (Federal Specifications) and NBS (National Bureau of Standards). All references in your code place a burden on you, the plumber, to understand what's required and comply with what's called for.

Questions in the plumbing systems section of this book are based on the two most popular national codes, the *Standard Plumbing Code* and the *Uniform Plumbing Code*. If you compare the code references for each question, you'll see how similar these plumbing codes actually are. In cases where there are some differences (mainly in the area where fixture units regulate pipe sizes and lengths), I've provided notes to explain the differences.

Most states adopt all or nearly all of one of these two popular codes and, of course, use that code as the authority for the state plumbing exam.

The Standard Plumbing Code is used in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and some parts of Delaware, Missouri, Oklahoma, Texas, and West Virginia.

The Uniform Plumbing Code is used in Alaska, California, Hawaii, Idaho, Maine, Montana, Nevada, New Hampshire, Oregon, Utah, Washington, and some areas of Arizona, Colorado, Iowa, Kansas, Missouri, Nebraska, North Dakota, Oklahoma, Pennsylvania, South Dakota, Texas, West Virginia, and Wyoming.

If you don't live in one of the 34 states listed above, the answers to some questions may vary slightly from the answers given in this book. But the differences between most plumbing codes is growing smaller and smaller with each passing year. After all, what's good plumbing practice in Massachusetts is also good plumbing practice in Indiana.

In the section on gas systems, I've based the questions and answers on the Standard Gas Code. It's compatible with the popular National Fuel Gas Code, and probably with whatever gas code is adopted in your area. The Standard Gas Code provides (as do all gas codes) the minimum requirements for gas installations.

Here's an important point: All exam questions are based on *minimum code requirements*. If the minimum pipe size permitted under the code is 1/2'' and you answer 3/4'' just to play it safe, your answer is *incorrect*.

How to Prepare for the Exam

This book is a guide to preparing for the journeyman or master plumbing exam. It isn't a substitute for studying the recommended references and it won't teach you the plumbing trade. But it will give you a *complete knowledge of the type of questions* asked in the plumbing exam. It will also give you a "feel" for the examination and provide some of the confidence you need to pass.

Emphasis is on multiple-choice questions because that's what nearly all tests have now. I've grouped the questions into chapters. Each chapter covers a single subject. This will help you discover your strengths and weaknesses. Analyze the questions you miss on the practice exam at the back of this book. You'll probably notice you're weaker in some subjects than others. If you've missed a lot of the gas questions or many of the math questions, go back and study these areas again.

Most question and answer books for plumbers provide the correct answers at the end of each chapter or at the end of the book without explanation. This book has the correct answer after each question, based on each of the two most popular plumbing codes or the Standard Gas Code.

When reading a question, cover the answer with a sheet of paper or card cut to size. Read the question carefully. Mark your answer on a separate sheet of paper before moving the paper that covers the correct answer. Then slide the paper down and check to see if your answer is correct. If it isn't, read the code responses to find out why it's wrong.

How to Study

Set aside a definite time to study, following a schedule that meets your needs. Study two or three nights each week or all day on Saturdays. Study alone most of the time. But spend a day reviewing with a plumbing buddy before exam day. You can help each other dig out the facts and concepts you'll need to pass the exam.

Study in a quiet, well-lighted room that's respected as your study space by family members and friends. If it's hard to find a spot like that in your home, go to the neighborhood library where others are reading and studying.

Before you begin to study, spend a few minutes getting into the right frame of mind. That's important. You don't have to be an Einstein to pass the plumber's exam. But good motivation will nearly guarantee your success. No one can provide that motivation but *you*. Getting your license is a goal you set for yourself; it's your key to a satisfying career and a better paying job.

As you study each reference, highlight or underscore important points with a yellow marker or red felt tip pen. That makes it easier to find important passages when you're doing the final review — and when you're taking the test.

Put paper tabs on the corners of each major section in all the references you'll take into the exam room. On the portion of the tab that extends beyond the edge of the book, write the name of the section or the subject. That makes locating each section easier and quicker — an important consideration on an open book test. Speed in locating answers is important. In the sample exam in this book, which is based on actual exams, you'll have less than four minutes to answer each question!

Your study plan should allow enough time to review each reference at least three times. Read carefully the first time. The next review should take only about 10% of the time that the first reading took. Make a final review of all references and notes on the day before the exam. This is the key to success in passing the exam: Review, review, review! The more you review, the better your grasp of the information and the faster you'll be able to find the answers.

The Examination

Your examination questions were probably compiled from lists submitted by members of the plumber's examination board. Board members usually include several senior plumbing contractors, perhaps a college professor, a registered engineer, and a code authority like a plumbing plans examiner. The exam will include *code*, *practical*, and *theoretical* questions. Some boards prefer theoretical questions. Others favor practical and code questions. No matter which type your examining authority emphasizes, this book will help you get prepared.

In areas where the journeyman or master plumbing exam is given two or three times each year, the examining authority will have several basic exams that are used in rotation. But the same examination will never be administered twice in a row.

The test writers maintain a bank of several hundred questions covering each test subject. Questions are selected at random, and chances are that some of the questions on any exam have already been used on an earlier examination.

Many questions are known as *universal truths*. With minor variations, these questions will be on nearly every plumber's exam in the country. This book is filled with the questions that pop up on nearly every plumbing exam.

Although plumbing is a complex trade, it's encouraging to note that there are only so many subject areas that any test can cover. And many of the questions on the exam will closely resemble questions in this book.

Types of Questions

Nearly all examination questions will be objective. This means you won't be required to draw complex piping isometrics of DWV or water piping systems and you won't have to write any essays. But many examinations do require that you at least identify which isometrics are *wrong* and draw simple corrections.

One major examining board gave the following instructions to all plumbers taking their certification examination:

The afternoon portion of the examination (four hours in duration), given on the first day, *has been changed*. Although all of the 80 questions are related to codes, approximately 10 questions will concern the interpretation of *isometric* drawings in which the examinee will be required to identify errors in the drawings, if any, in accordance with code requirements. In addition, another 10 questions will require the examinee to examine isometric drawings. If the drawings are not in conformance with codes, the examinee will be required to redraw isometrics correctly in the spaces provided.

As you know, the lines on isometric drawings represent pipe and fittings. Symbols are used to show the location and type of fixtures. If your examining board requires reading and drawing of isometrics, you'll need additional preparation for the exam. *Plumbers Handbook*, by this author, explains how to read and create plumbing isometrics. If your local bookstore doesn't have *Plumbers Handbook*, use the order form at the back of this manual. Once you understand the key principles, it's easy to read and make isometric drawings.

The Answer Sheet

Following this introduction, you'll find a sample answer sheet that was used for a major plumbing examination. Answer sheets like these are designed for computer grading. Each question on the exam is numbered. Usually there will be four or five possible responses for each question. You'll be required to mark the best answer on the answer sheet.

Here's an example. The question is:

1) Atlanta is the capital city of the state of:

(A) Florida	(C) Arizona
(B) Texas	(D) Georgia

You should mark answer D for question 1 on the answer sheet.

Your answer sheet may vary slightly from the one that follows this section. But no matter what the answer sheet looks like, be sure to follow any instructions on that sheet! Putting the right answers in the wrong section will almost certainly cause you to fail.

Examination Day

On the day of your examination, listen to any oral instructions given and carefully read the printed directions. Failing to follow instructions will probably disqualify you.

There won't be any trick questions on most exams. Examination boards usually take their work very seriously. But the test writers will probably include at least a few questions that have to be read very carefully to be understood. The question may look familiar and the answer may seem obvious. But re-reading the question may point out some subtle distinction that makes the obvious answer totally wrong.

Any time the answer seems obvious at first glance, read the question again. Always look for

the qualifying word or phrase in the question. Words like always, never, least, most likely, smallest, but not less than, shall and may can be dynamite. They can change the whole meaning of the question.

Sometimes several of the answers may seem possible. But only one will be correct. If you're not sure of the answer, use the process of elimination. Strike out answers you *know* are wrong. Then select the most likely of the answers that remain. This can change your odds from five-to-one to two-to-one on a question. Don't ever assume that there's an answer pattern. I've never seen a planned answer pattern on a plumbing exam. By chance, there may be a short series of answers that go "a, a, c, a, a, c, a, a. But don't assume that the next answer is "c". It probably isn't, and you'll probably miss several questions if you think you see a pattern in the answers and try to follow it. Read each question carefully and give the answer you think is correct.

Most important, pace yourself. Spend the first minute or two after the exam is passed out looking over the entire test booklet. Make an estimate of how many minutes should be allowed for each section or for each question. Check your progress after each 30 minutes. Most applicants won't finish all questions. Any question you don't answer will aways be wrong, of course. Time will nearly always be at a premium on an open book exam. With enough time everyone could get 100%! Using your time wisely may be half the battle.

Don't spend too much time on the toughest questions. It's a mistake to squander 10 minutes on the hardest question in the exam (and get it wrong) and then leave several relatively easy questions unanswered because you ran out of time. My advice is to skip the hard questions on the first pass. Then come back to them as time permits.

If you complete the exam early, don't leave the room. Spend the remaining time reviewing your answers. Try to find at least *one* error. It could mean the difference between passing or failing the examination. Many applicants do fail by just one point. Don't find yourself in that position. Make the most of every second available.

Organization of This Book

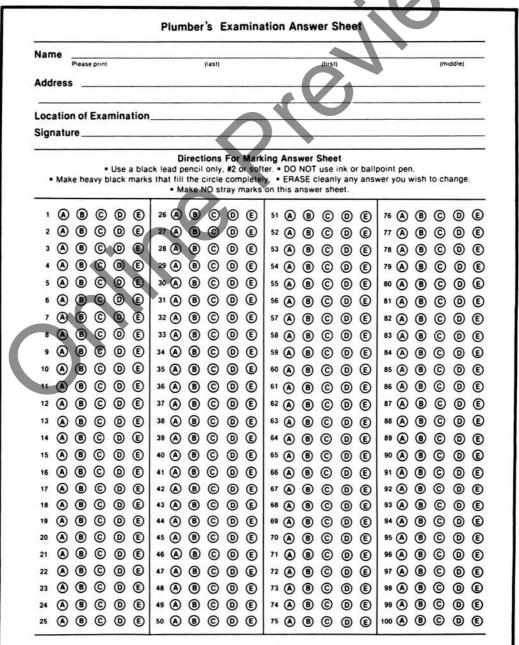
I've included here questions on gas systems, specialized plumbing systems and several other plumbing-related topics. There are two reasons for this. First, many exams include questions on these subjects. Second, this information is not readily available in the standard reference books. You may have trouble finding books that cover these questions.

This book is organized into five sections. Part One has questions and answers and code responses on plumbing systems. Part Two has questions and answers and code responses on gas systems. Part Three has questions and answers and code responses for more specialized plumbing subjects. Part Four has questions and answers and solutions (where applicable) on plumbing-related topics. Part Five is a sample examination. Take this test two or three days before you are to take the actual exam. Use it to spot areas where you need extra review.

Let's Get Started

Enough of the preliminaries. It's time to get started with the questions and answers. Used correctly, this book will give you the confidence you need *now* to prepare thoroughly for the upcoming examination.

Happy studying! And best wishes.



Sample answer sheet

Part One Plumbing Systems

- General Regulations
- Plumbing Definitions
- Materials: Quality and Weights
- Joints and Connections
- Traps and Cleanouts
- Sanitary Drainage Systems
- Vents and Venting
- Special Traps, Interceptors and Separators
- Indirect and Special Waste Piping
- Private Sewage Disposal Systems
- Water Distribution Systems
- Storm Water Drainage Systems
- Plumbing Fixtures and Special Plumbing Fixtures

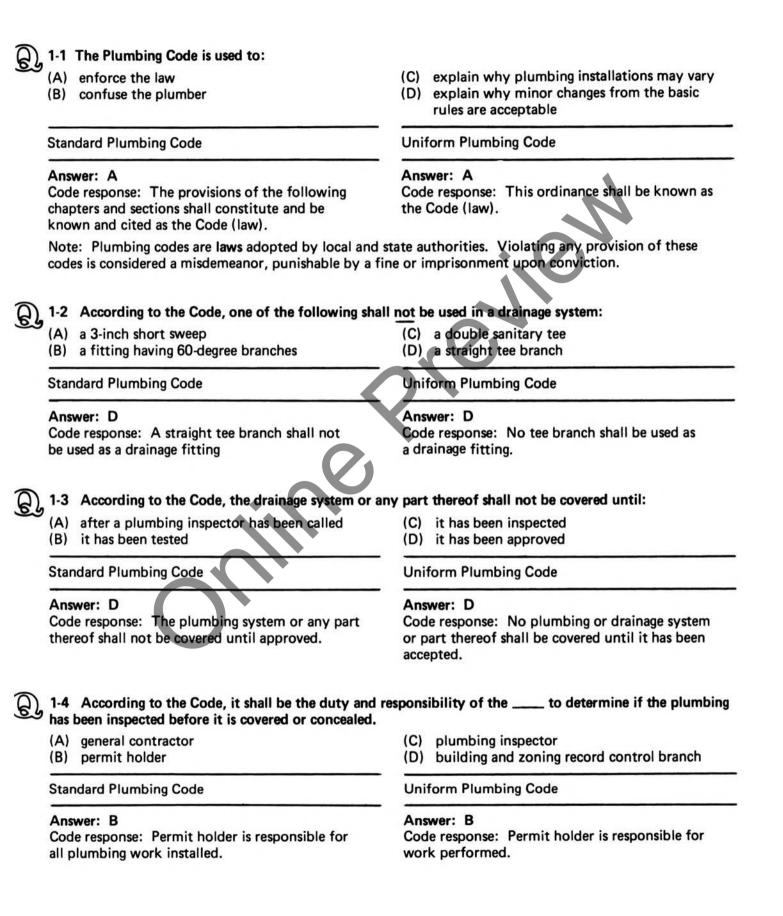
Chapter 1

Plumbing Systems — General Regulations

The general regulations in the plumbing code are intended as broad principles that apply to all plumbing work. For example, general regulations require the proper disposal of sewage and other waste materials.

General regulations cover (1) fittings used in direction changes, (2) fittings that are prohibited, (3) repairs and alterations to existing buildings, (4) trenching, excavation, and backfill, (5) structural safety, (6) protection of pipes, (7) location of plumbing fixtures, and much more. They require that the plumbing design, installation and workmanship conform with accepted engineering practices.

The questions in this chapter are a comprehensive test of these regulations for plumbing systems. Don't underestimate the importance of this part of the code. Every plumber needs a thorough understanding of the general regulations.



1-5 Every plumbing fixture directly connected to the drainage system, according to the Code, shall: (A) have an overflow (C) have hot and cold water (B) be maintained in a sanitary manner (D) be equipped with a water-seal trap Standard Plumbing Code Uniform Plumbing Code Answer: D Answer: D Code response: Be trapped by an approved type Code response: Be equipped with a water-seal water-seal trap. trap. 1-6 According to the Code, drainage systems water-tested for tightness and for inspection shall be tested with no less than a _____ head of water. (A) 6-foot (C) 10-foot (B) 8-foot (D) 12-foot Standard Plumbing Code Uniform Plumbing Code Answer: C Answer: C Code response: No section shall be tested with Code response: No section shall be tested with less than a 10-foot head of water. less than a 10-foot head of water. 1-7 According to the Code, when notching the ends of joists to install water piping, the depth of the notches shall not exceed _____ of the depth of the joists. (A) 1/16 (C) 1/8 (B) 1/32 (D) 1/4 Standard Plumbing Code Uniform Plumbing Code Answer: D Answer: D Code response: When notching the ends of Code response: When notching, no structural memjoists, the depth shall not exceed 1/4 the depth ber shall be seriously weakened or impaired. of the joists. Note: The Uniform Plumbing Code provides a warning but does not set a particular standard. 1-8 The Code requires that drainage fittings have threads that are tapped to allow for: (A) full thread engagement (C) simple adjustment (B) grade (D) pipe expansion Standard Plumbing Code Uniform Plumbing Code Answer: B Answer: B Code response: None. Code response: The threads of drainage fittings shall be tapped so as to allow for grade.

Note. The Standard Plumbing Code does not address this particular question. It is common knowledge, though, that manufacture of threaded drainage fittings allows for grade or pitch. Answer "B" is correct.

1-9 The Code requires that when a water service pipe is installed in the same trench with a building sewer, there must be a minimum separation of _____ inches. (A) 6 (C) 12 (B) 10 (D) 18 Standard Plumbing Code Uniform Plumbing Code Answer: C Answer: C Code response: The bottom of the water service Code response: The bottom of water service pipe, at all points, shall be at least 12 inches above the pipe, at all points, shall be at least 12 inches above the top of the sewer pipe. top of the sewer pipe. 1-10 The Code requires that sewage or other waste from a plumbing system be before it is discharged into any waterway. (A) discharged through a settling tank rendered innocuous (C) (B) treated with Clorox (D) determined detrimental Uniform Plumbing Code Standard Plumbing Code Answer: C Answer: C Code response: Sewage or other waste must Code response: Sewage or other waste must first first be rendered innocuous. be rendered innocuous. fixture unit(s) flow rate shall be deemed to be 1 cubic foot 1-11 According to the Plumbing Code per minute. (A) 1 (C) 3 (B) 2 (D) 4 Standard Plumbing Code Uniform Plumbing Code Answer: A Answer: A Code response: A fixture unit flow rate shall be Code response: One fixture unit discharge capacity deemed to be 1 cubic foot of water per minute. shall be deemed to be 7½ gallons per minute. 1-12 According to the Code, 2-inch copper tubing installed horizontally must be supported at distances of not less than _____ feet. (A) 4 (C) 8 (B) 6 (D) 10 Standard Plumbing Code Uniform Plumbing Code Answer: D Answer: D Code response: Copper tubing shall be supported Code response: Copper tubing shall be supported at approximately 10-foot intervals for piping 2 at approximately 10-foot intervals for piping 2 inches and larger. inches and larger in diameter.

1-13 A single-family house, connected to a public sewer, may discharge all but one of the following substances through its drainage system without violating the Code: (A) human excrement (C) fireplace ashes (B) potable water (D) clothes washer water Standard Plumbing Code Uniform Plumbing Code Answer: C Answer: C Code response: No substance which will Code response: It shall be unlawful for any person clog the pipes shall be allowed to enter the to deposit, into any plumbing fixture which is connected to any public sewer, any ashes. building drainage system. 1-14 According to the Code, vertical ____ must be supported at the base and at each story level at intervals not exceeding 15 feet. (A) cast-iron soil pipe (C) copper tubing (D) lead pipe (B) threaded pipe Uniform Plumbing Code Standard Plumbing Code Answer: A Answer: A Code response: Cast-iron soil pipe shall be Code response: Cast-iron soil pipe shall be supported at the base and at each story level supported at every story level or closer. at intervals not exceeding 15 feet. 1-15 All buildings intended for human habitation, according to Code, must: (A) have an adequate supply of clear water (C) be maintained in a sanitary manner (B) be connected to a public sewer (D) have an adequate supply of potable running water Standard Plumbing Code Uniform Plumbing Code Answer: D Answer: D Code response: All buildings intended for human Code response: Each plumbing fixture shall be habitation shall be provided with an adequate, provided with an adequate supply of potable safe and potable water supply through a safe running water piped in an approved manner. system of piping. 1-16 According to Code, the ladder required by an inspector so that he can make a final inspection must be furnished by the: (A) general contractor (C) building and zoning department (B) roofing contractor (D) plumbing contractor Standard Plumbing Code Uniform Plumbing Code Answer: D Answer: D Code response: Equipment necessary for the Code response: The equipment necessary for inspection shall be furnished by the plumber.

inspection shall be furnished by the person to whom

the permit is issued.

(A) 1-17 According to Code, pipe fittings that _____ shall not be used in sanitary drainage plumbing systems.

- (A) are metallic
- (B) are nonmetallic

Standard Plumbing Code

Answer: D

Code response: Fittings that offer abnormal obstruction to flow shall not be used.

- (C) increase in size
- (D) have abnormal flow obstruction

Uniform Plumbing Code

Answer: D

Code response: No fitting which obstructs the flow of sewage shall be used.

2) 1-18 A plumber requests an inspection and the work fails the test. According to Code, the plumber:

- (A) has 10 days to make corrections
- (B) shall make necessary corrections, then resubmit the work for inspection

Standard Plumbing Code

Answer: B

Code response: If the official finds that the work will not pass the test, the permit holder **shall** be required to make necessary corrections, and the work **shall** then be resubmitted for inspection.

(C) must make necessary corrections while the inspector waits (D) must make the property corrections, then

(D) may make the necessary corrections, then may resubmit the work for inspection

Uniform Plumbing Code

Answer: B

Code response: If the Administrative Authority finds that the work will not pass the test, necessary corrections **shall** be made, and the work **shall** then be resubmitted for test or inspection.

Note: The qualifying word in both Code responses is shall, a mandatory term.

9 1-19 In existing buildings in which plumbing installations are to be renovated, the Code may permit the work to be done:

- (A) only in a workmanlike manner
- (B) with necessary deviations, providing the intent of the Code is met

Standard Plumbing Code

Answer: B

Code response: In existing buildings in which plumbing installations are to be renovated, deviations from the provisions of this Code may be permitted, providing such deviations conform to the intent of the Code.

- (C) if like materials are used for replacement
- (D) without a permit

Uniform Plumbing Code

Answer: B

Code response: In existing buildings in which plumbing installations are to be renovated, deviations from the provisions of this Code are permitted, provided such deviations are necessary.

Note: Both Codes, though wordy, eventually reach a similar conclusion. Answer "B" is correct.

) 1-20 According to Code, the water service pipe supplying water for a two-bedroom, one-bath house must be:

- (A) installed in 20-foot lengths when possible
- (B) buried at least 12 inches below grade

Standard Plumbing Code

Answer: C

Code response: Water service lines shall in no case be less than ¾-inch nominal diameter.

- (C) no less than ¾-inch I.D. piping
- (D) no less than ¾-inch O.D. piping

Uniform Plumbing Code

Answer: C

Code response: No building water supply pipe shall be less than $\frac{3}{2}$ -inch in diameter.

(1-21 According to Code, the horizontal distance "X	" must be a minimum of feet.
Sewer	-x
Fi	gure 1-1
(A) 3 (B) 5	(C) 8 (D) 10
Standard Plumbing Code	Uniform Plumbing Code
Answer: B Code response: Underground water service pipe and building sewer shall not be less than 5 feet apart horizontally.	Answer: Code response: The Uniform Plumbing Code does not address the horizontal separation of sewer and water service pipe.
appear. For journeyman exams, check local Code to	ires a minimum of inches of clean fill to be added
(A) 4 (B) 6	(C) 12 (D) 18
Standard Plumbing Code	Uniform Plumbing Code
Answer: C Code response: Reasonably clean backfill shall be placed 12 inches over the pipe.	Answer: C Code response: Trenches shall be backfilled in thin layers to 12 inches above top of piping with clean earth.
(A) 1-23 In lieu of the water test, the Code will accept of drainage and vent system:	one of the following for a final test of a completed
(A) air(B) gas mixture of oil of peppermint	(C) oxygen (D) mercury vapor
Standard Plumbing Code	Uniform Plumbing Code
Answer: A Code response: The air test is an acceptable method for testing drainage and vent systems.	Answer: A Code response: Air testing a drainage and vent sys- tem is an acceptable method prescribed in this Code.

.

1-24 According to Code, a single or double sanitary tee may be used in drainage lines where the direction of flow is from: (A) horizontal to vertical (C) vertical to horizontal (B) horizontal to horizontal (D) vertical to vertical Standard Plumbing Code **Uniform Plumbing Code** Answer: A Answer: A Code response: In drainage lines, a sanitary tapped Code response: In drainage lines, a single or double sanitary tee may be used when the directee may be used on a vertical line as a fixture tion of flow is from horizontal to vertical. connection. Note: A fixture connection (flow) is from the horizontal to the vertical. The correct answer for both Codes is "A."

1.25 One of the following fittings is not acceptable by Code for changes in direction in drainage piping:

(A) wye

(B) 1/5-bend

Standard Plumbing Code

Answer: B

Code response: A 1/5-bend is not listed as an approved fitting for changes in direction in a drainage piping system.

Uniform Plumbing Code

(C) long sweep 1/2-bend

1/6-bend

Answer: B

(D)_

Code response: A 1/5-bend is not listed as an approved fitting for changes in direction in a drainage piping system.

3 1-26 Whenever compliance with all the provisions of the Code fails to eliminate _____, the owner or his agent has to make acceptable corrections.

- (A) bad workmanship
- (B) a drainage problem

Standard Plumbing Code

Answer: C

Code response: Whenever compliance with all the provisions of this Code fails to eliminate or alleviate a nuisance. . .

1-27 According to Code, piping installed underground must be:

- (A) installed a minimum of 6 inches below grade
- (B) nonmetallic to prevent corrosion

Standard Plumbing Code

Answer: D

Code response: Buried piping shall be supported throughout its entire length.

- (C) a nuisance
- (D) uncertified workers from a job

Uniform Plumbing Code

Answer: C

Code response: Whenever compliance with all the provisions of this Code fails to eliminate or alleviate a nuisance...

- (C) graded to drain to low point
 - (D) supported throughout its entire length

Uniform Plumbing Code

Answer: D

Code response: In-ground piping shall be laid on a firm bed throughout its entire length and shall be adequately supported.

1-28 The plumber decides to water-test the drainage system in its entirety. According to Code, before inspection starts, the water must be kept in the system for a minimum of _____ minutes. (A) 5 15 (C) (B) 10 (D) 20 Standard Plumbing Code Uniform Plumbing Code Answer: C Answer: C Code response: The water shall be kept in the Code response: The water shall be kept in the system for at least 15 minutes before inspection system for at least 15 minutes before inspection starts. starts. 1-29 The Code specifies that all trenching required for the installation of a plumbing system within the walls of a building be: (A) not closer than 5 feet to a building (C) covered immediately after installation for foundation safety of other workers (B) not deeper than 3 feet maximum open trench work (D)Standard Plumbing Code Uniform Plumbing Code Answer: D Answer: D Code response: All excavation for installation Code response: All excavation required to be made of a building drainage system shall be open trench for the installation of a building drainage system work. shall be open trench work. 1-30 According to Code, no plumbing permit can be considered valid until: (A) plans are approved by plumbing official (C) architect's seal is imprinted upon approved plans (B) prescribed fees are paid (D) permit is signed by qualifier Standard Plumbing Code Uniform Plumbing Code Answer: B Answer: B Code response: No permit shall be valid until fees Code response: Such applicant shall pay for each prescribed in this section shall have been paid. permit, at the time of issuance, a fee in accordance with the following schedule ... 1-31 Spaces between piping, sleeves, walls and floors, according to Code, must be: (A) provided with a minimum annular space of (C) filled or tightly caulked 1/2-inch (B) provided with a vermin-proof cap (D) filled to the top with fine sand Standard Plumbing Code Uniform Plumbing Code Answer: C Answer: C Code response: Annular spaces between sleeves Code response: Voids around piping passing through and pipes shall be filled or tightly caulked. masonry floors shall be appropriately sealed.

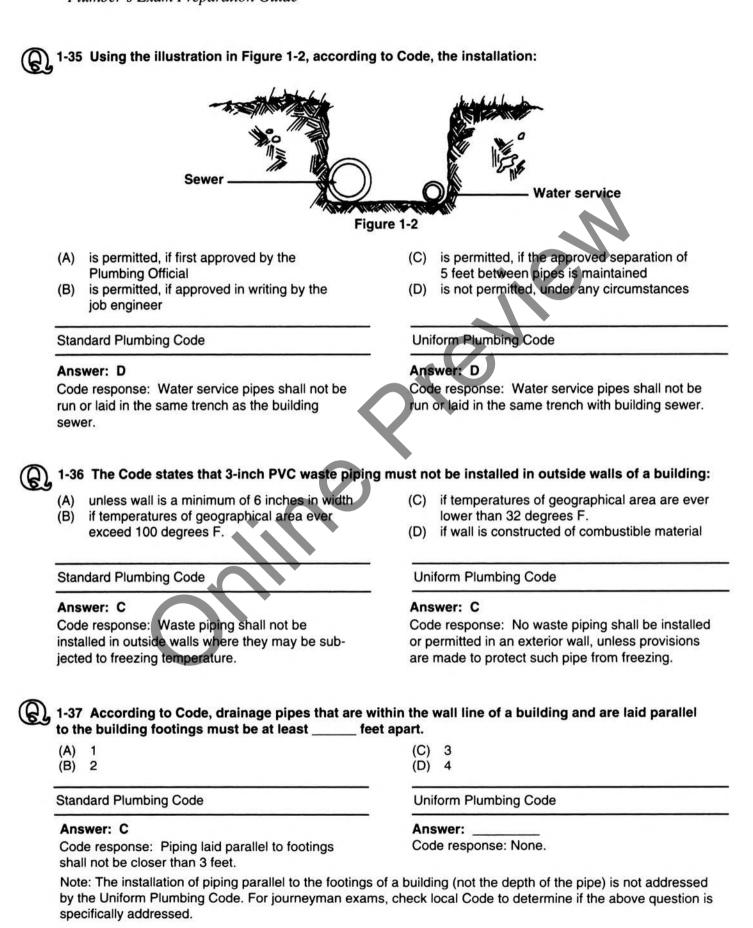
1-32 According to Code, a 3-inch waste pipe passing through a foundation wall must be protected from external loadings or against differential settlement. A _____-inch cast-iron sleeve built into the wall is acceptable for this purpose.

(A) 3½ (B) 4	(C) 5 (D) 6
Standard Plumbing Code	Uniform Plumbing Code
Answer: B Code response: A cast-iron sleeve two pipe sizes greater than the pipe passing through the wall is acceptable by Code.	Answer: Code response: All piping passing under or through walls shall be protected from breakage.
	ode is the principal Code reference. For journeyman
2), 1-33 According to Code, vent piping shall not be dri	illed or tapped:
 (A) unless approved by the Administrative Authority (B) for the purpose of making connections thereto 	 (C) unless drilled opening is to be used for roof- mounted A.C. condensate drain connection (D) without prior approval by job architect
Standard Plumbing Code	Uniform Plumbing Code
Answer: A Code response: Vent piping shall not be drilled or tapped, unless approved by the Administrative Authority.	Answer: B Code response: Vent piping shall not be drilled or tapped for the purpose of making connections thereto.
Note: Each of the two Codes (if used as the principal answer. For journeyman exams, check local Code re	al Code reference for an exam) has a different correct equirements for correct answer.
ລ) 1-34 According to Code, a fitting having a hub in th	e direction opposite to flow in the drainage system:
(A) must not be used	 (C) may be used by special permission of the plumbing inspector
(B) may be used if the pipe is cut by a saw	(D) may be used if drainage piping is above grade
Standard Plumbing Code	Uniform Plumbing Code
Answer: B Code response: Shall not be used, unless the	Answer: A Code response: No double-hub fitting shall be used

pipe is cut by either a saw or snap cutter.

Code response: No double-hub fitting shall be used as a drainage fitting.

Note: Both Codes prohibit the use of this particular type of fitting. Using the above wording, there is a different correct answer for each Code.



roof (B) a minimum of 8 feet from nearest window	 (C) provided with increasers to prevent frost closure (D) made watertight
Standard Plumbing Code	Uniform Plumbing Code
Answer: D Code response: Joints at the roof around vent pipes shall be made watertight.	Answer: D Code response: Joints at the roof around vent pipes shall be made watertight.
Q, 1-39 Plumbing fixtures, according to Code, cannot b	e located in such a manner:
(A) as to prevent their use by the physically	(C) as to confuse the need for additional fixtures
handicapped (B) as to prevent calculation of minimum fixture unit load in sizing drainage piping	(D) as to interfere with the normal operation of a door
Standard Plumbing Code	Uniform Plumbing Code
Answer: D Code response: Fixtures shall not be located in such a manner as to interfere with the normal operation of doors. 1-40 Pipe trench excavation deeper than and parallel within an angle of pressure as transferred from the ba piping must be from the footings.	Answer: D Code response: Fixtures shall not be so located as to interfere with the normal operation of doors. Ito footings, according to Code, must not be placed ase of the structure to the sides of the excavation. The
piping must be nom the lootings.	
 (A) 25 degrees (B) 35 degrees 	(C) 45 degrees(D) 55 degrees
(A) 25 degrees	
(A) 25 degrees(B) 35 degrees	(D) 55 degrees Uniform Plumbing Code Answer: C
 (A) 25 degrees (B) 35 degrees Standard Plumbing Code Answer: C Code response: Piping installed deeper than and 	 (D) 55 degrees Uniform Plumbing Code Answer: C Code response: Trenches deeper than and parallel to the footings of any building must be 45 degrees therefrom. mber decides to test the system with air. According
 (A) 25 degrees (B) 35 degrees Standard Plumbing Code Answer: C Code response: Piping installed deeper than and parallel to footings shall be 45 degrees therefrom. 1-41 Having a unique plumbing installation, the plur to Code, air must be forced into the system until the 	 (D) 55 degrees Uniform Plumbing Code Answer: C Code response: Trenches deeper than and parallel to the footings of any building must be 45 degrees therefrom. mber decides to test the system with air. According
 (A) 25 degrees (B) 35 degrees Standard Plumbing Code Answer: C Code response: Piping installed deeper than and parallel to footings shall be 45 degrees therefrom. (A) 1-41 Having a unique plumbing installation, the plum to Code, air must be forced into the system until the square inch. (A) 5 	 (D) 55 degrees Uniform Plumbing Code Answer: C Code response: Trenches deeper than and parallel to the footings of any building must be 45 degrees therefrom. mber decides to test the system with air. According re is a uniform gauge pressure of pounds per (C) 15

(2) 1-42 The Code specifies that vertically installed piping must be secured at sufficiently close intervals to:

- (A) carry the weight of the pipe
- (B) carry the weight of the pipe and its contents

Standard Plumbing Code

Answer: B

Code response: Vertical piping shall be secured at sufficiently close intervals to carry the weight of the pipe and contents.

- (C) prevent strains or stresses
- (D) prevent sagging

Uniform Plumbing Code

Answer: B

Code response: Vertical piping shall be secured at sufficiently close intervals to carry the weight of the pipe and its contents.

1-43 In accordance with Code, horizontally installed piping must be supported at sufficiently close intervals to:

- (A) carry the weight of the pipe
- (B) carry the weight of the pipe and its contents

Standard Plumbing Code

Answer: D

Code response: Horizontal piping shall be supported at sufficiently close intervals to prevent sagging.

- (C) prevent strains or stresses
- (D) prevent sagging

Uniform Plumbing Code

Answer: D

Code response: Horizontal piping shall be supported at sufficiently close intervals to prevent sagging.

1-44 Code requires that all piping installed in corrosive type material be:

- (A) first approved by the Plumbing Official
- (B) supported properly

- (C) protected properly
- (D) in accordance with manufacturer's recommendations

Standard Plumbing Code

Answer: C

Code response: Pipes passing through or under corrosive material shall be protected against external corrosion.

Uniform Plumbing Code

Answer: C

Code response: All piping passing through or under corrosive material shall be protected in an approved manner.

1-45 Code requires that vertical galvanized steel piping be supported at not less than:

- (A) 8-foot intervals
- (B) 10-foot intervals

Standard Plumbing Code

Answer: D

Code response: Threaded pipe shall be supported at not less than every other story.

- (C) every story height
- (D) every other story height

Uniform Plumbing Code

Answer: D

Code response: Screwed pipe shall be supported at not less than every other story height.

(a) 1-46 According to Code, bases of soil stacks must be supported:

- (A) with concrete blocks
- (B) by concrete piers

Standard Plumbing Code

Answer: C

Code response: Bases of all soil stacks shall be supported to the satisfaction of the plumbing official.

- (C) to the satisfaction of the plumbing inspector
- (D) to the satisfaction of the job engineer

Uniform Plumbing Code

Answer: C

Code response: All piping shall be adequately supported to the satisfaction of the Administrative Authority.

(2) 1-47 Codes requires that horizontally hung cast-iron soil pipe in 10-foot lengths have minimum spacing of supports not more than _____ feet apart.

- (A) 5
- (B) 8

Standard Plumbing Code

Answer: C

Code response: Horizontal cast-iron soil pipe shall be supported at not more than 10-foot intervals on 10-foot lengths.

Uniform Plumbing Code

Answer: C

(C) 10

(D) 12 4

Code response: Suspended cast-iron soil pipe that exceeds 5 feet in length may be supported at not more than 10-foot intervals.

1-48 According to Code, a water test may be applied to the drainage and vent system of a two-story residence:

- (A) only in its entirety
- (B) only in sections

Standard Plumbing Code

Answer: D

Code response: The water test shall be applied to the drainage system in its entirety or in sections.

- (C) only during working hours
- (D) in its entirety or in sections

Uniform Plumbing Code

Answer: D

Code response: The water test shall be applied to the drainage and vent system either in its entirety or in sections.

) 1-49 To meet the Code, all sections of a plumbing drainage and vent system must be tested with:

- (A) water
- (B) mercury vapor

Standard Plumbing Code

Answer: C

Code response: All sections of a plumbing drainage and vent system must be tested with a water test or by an air test.

(C) air or water

(D) air

Uniform Plumbing Code

Answer: C

Code response: All sections of a plumbing drainage and vent system must be tested with a water test or by an air test. 1.50 The air test for a plumbing drainage and vent system must, by Code, be made by attaching the air compressor or other test apparatus to:

- (A) the lowest fixture outlet available
- (B) the highest vent opening

Standard Plumbing Code

Answer: C

Code response: The air test for a plumbing drainage and vent system shall be made by attaching the air compressor or other test apparatus to any suitable opening.

- (C) any suitable opening
- (D) a dishwasher waste opening

Uniform Plumbing Code

Answer: C

Code response: The air test for a plumbing drainage and vent system shall be made by attaching the air compressor or other test apparatus to any suitable opening.

1-51 The Code specifies that a satisfactory hanger which supports any piping must be:

- (A) of same material as piping
- (B) accessible

Standard Plumbing Code

Answer: D

Code response: A satisfactory hanger which supports any pipe must be of sufficient strength to maintain its proportionate share of the pipe alignment and to prevent sagging.

ନ

1-52 The Code permits that a plumbing system installed before January 1, 1982, may be altered:

- (A) without complying with latest Code requirements
- (B) but, must comply with latest Code requirements

Standard Plumbing Code

Answer: A

Code response: In existing buildings in which plumbing installations are to be altered, necessary deviations from the provisions of this Code may be permitted. Uniform Plumbing Code

(C) same size as pipe used(D) of sufficient strength

Answer: D

Code response: A satisfactory hanger which supports any pipe must be of sufficient strength to maintain its proportionate share of the pipe alignment and to prevent sagging.

- (C) without obtaining a permit
- (D) and Code requirements waived if work is less than 50 percent of the existing system

Uniform Plumbing Code

Answer: A

Code response: No provision of this Code shall be deemed to require a change in an existing building when such work was installed in accordance with the law in effect prior to the effective date of this Code.

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