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ABSTRACT

This manual, developed as part of an English as a second language program in construction literacy skills in Philadelphia, contains four units of lessons incorporating construction fundamentals along with language instruction. The four units provide lesson plans in carpentry, plumbing, electrical work, and career information. Lesson plans include an introduction, general class discussion, terms, learning activities (such as language experience writing, role playing, or crossword puzzles), assignments, and test questions. Information sheets illustrated with line drawings are provided,d and an answer key and 17-item bibliography are included, along with suggestions for teaching the material. (KC)

Constructing English Language Skills While Reconstructing Homes

by J. Saville Janney

Norris Square Civic Association
in cooperation with
Center For Literacy

August 1990

Section 353 Project # 98-003

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Constructing English Language Skills While Reconstructing Homes

by

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August 31,1990

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TABLE OF CONTENTS

PREFACE

Norris Square Civic Association is a community-based organization in West Kensington incorporated in 1982 by a group of neighborhood residents. Since its inception, we have attempted to address the problems in our community by attacking the root causes of the problems and encouraging the development of residents' skills.

With a population of over 10,000 persons, Norris Square is one of the poorest neighborhoods in the city of Philadelphia, with a median income of $6900, while 47% of its families live below the poverty line. The unemployment level is 38%, the highest in the city, and the drop-out rate for Latinos is 20% higher that the overall city rate. Since its population is 63% Puerto Rican, one can deduce that lack of English literacy skills are an underlying problem, in the community.

Given these problems, NSCA embarked on an ambitious project to develop a housing rehabilitation crew of community residents which would rehabilitate vacant properties in the neighborhood, thus provide desperately needed housing at the same time. The project has been successful. In April 1990 our first property was renovated. Renovation of a second property is underway. The development of the crew necessitated the incorporation of a training program to make the group competitive and successful. While the trade skills training is done on the job, the ESL-Literacy component is a more complex task to implement. The development of a curriculum specifically geared around the construction trades that would give participants a "working language" was seen as an essential component of the project that necessitates a particular expertise.

The opportunity to have Center for Literacy, Philadelphia's oldest and largest literacy service providing agency, develop this curriculum represents to us the perfect wedding of resources to solve community problems. The problem and the solution identified by the community and the implementation pieces designed with the particular expertise needed: both worked jointly to resolve complex problems.

We are excited about this manual and its long term implications. Already, other community organizations have demonstrated an interest in participating in such a training program. We hope this manual will assist those who wish to undertake similar projects.

Patricia De Carlo
Director NSCA
July, 1990

ACKNOWLEDGMENTS

I would like to acknowledge with deep gratitude the following people without whom I would not have been able to complete this project.

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J. Saville Janney
Philadelphia, Pa.
August 1990

INTRODUCTION

This book will be of use to administrators, teachers and students. The glossaries are for teacher reference but can also be used by students. The lessons were designed for students. Administrators interested in a trades literacy program can use this book as a reference.

I. HOW IS THIS BOOK BEST USED?

The content of the lessons in this book reflect what students learned in their trades training program. For the most part, literacy skills were taught concurrently with trades skills and so this manual reinforces in print what students did on the job.

This book will be best used in a similar situation, where a trades program is being offered and where a literacy class is a part of the program. If a student has a background in the trades, that background will assist him or her with the literacy lessons if concurrent training is not possible. The lessons can also be used with students who have minimal background since the reading format is designed for those new to construction literacy.

II. HOW CAN I CREATE A CURRICULUM THAT WILL BEST SUIT THE NEEDS OF MY STUDENTS, OR IS THE REALLY IMPORTANT?

It is essential to have a curriculum that addresses the specific needs of the students. Students will become disinterested if they feel that the class work is not relevant. And obviously each new construction project will have its own particular needs. So in order to create a curriculum that will best suit the needs of the students, the teacher must have an on-going and daily relationship with the construction director. She must also be informed of the daily progress of the project and any problems that arise. She should analyze the daily progress from an educator's perspective, for example: "Was the problem with the second floor tub installation caused by misread directions? Was the problem with the door frame caused by misunderstood oral instructions from the project director?" From this vantage point the teacher can help the project avoid

future problems and direct the curriculum in a way that is most relevant to the success of both the project and the student.

III. AREN'T ALL CONSTRUCTION PROJECTS ABOUT THE SAME?

No. There are many common denominators in most construction projects but each one has its own unique characteristics. This manual deals with the most common terminology. It also tries to outline basic systems of carpentry, electrical and plumbing trades. It is by no means comprehensive. Each different city and county has its own set of code regulations and every day new construction materials are being introduced. The teacher should be familiar with all the local codes and construction materials involved in her project.

IV. BUT I DON'T KNOW ANYTHING ABOUT THE CONSTRUCTION TRADES!

In my opinion it's almost better that the teacher has little to no expertise in the construction field. In that way she will not assume anything.

Talking to plumbers and electricians can be as confusing as talking to doctors. Very often the basic concepts and the vocabulary they use are unfamiliar to the lay person. Trade manuals are of little help because they are written in very technical and awkward language and rarely have glossaries to aid the reader. If the teacher can make a personal journey through the mire of technical language and odd explanations, she can have a better understanding of the starting point of the student and be in a better position to bridge that gulf from naive lay person to knowledgeable conversant.

V. HOW DO I PREPARE MYSELF TO TEACH THIS CLASS?

Don't panic !! You won't have to build the building. You'll only monitor the language that is used on the site and with the suppliers. Here are a few suggestions to help you prepare.

1. Read any "How to ..." books you can find. Some will be more helpful than others. (see bibliography for suggestions)

2. Talk to as many plumbers, electricians and carpenters as you can find. Listen to their language as they explain things to you. Very often the language used in books and in supply stores is different from what

working tradesmen use. In other words there is a lot of slang in the construction field. Be aware of it.

3. Read the specifications for the project.

4. Get the code regulations from your local municipal licensing and inspection board.

5. Ask different plumbers, electricians and carpenters about your ideas for lesson plans.

6. Be in constant communication with your construction project director.

VI. WHAT ARE IMPORTANT COMPONENTS OF EACH CLASS?

The pace of the class should be quick enough to keep the attention of the students. There should be at least three activities per class. This may include a conversation exercise to warm up the students followed by a worksheet followed by a reading exercise. Consider the mood and temperament of the class. Start with a quiet exercise and move to a more interactive one or the opposite: start with a very interactive exercise and move to an exercise where the student works more independently. Please refer to the sample lesson plans at the beginning of each chapter to get ideas for how to plan your class.

VII. HOW DO TEACHERS ASSESS THE LANGUAGE LEVEL OF THE STUDENTS?

Conventional testing is not recommended. Many students have had negative academic experiences and to start a new course of study with a difficult assessment test could kill their enthusiasm before they even get started with the class. The recommended way is to make assessments on a regular basis. These assessments came in the form of class review of pre-reading vocabulary, the use of new vocabulary words, and the answers to comprehension questions. Meet the students where they are based on the results of your assessment and custom design the course to address their particular needs.

VIII. HOW CAN I PREPARE A READING LESSON?

Each reading lesson should always have the following four components:

1. PRE-READING QUESTIONS AND VOCABULARY

The teacher should prepare the students for the reading text by generating discussion that gets the students thinking about the text they are about to read. She should help the students share with each other the knowledge that they already have and bring to the text. These questions can be open-ended for example: "Who knows how to install a toilet?" "What are some of the words that plumbers use in their work?" In addition to pre-reading questions, she should select words from the text that she thinks might be unfamiliar to the students. Again the discussion about the new vocabulary words should involve the students as much as possible using their previous knowledge as a resource. The teacher can for example write a list of the new words on the board and ask "who knows what a vanity is?" etc. There should always be a visual reinforcement of the word being discussed either on the blackboard or in a hand-out. Examples of pre-reading exercises accompany each reading in this manual.

2. TEXT

The text should be appropriate for the students. It should neither be too challenging so as to overwhelm them nor too simple so as to bore them. Remember, if they are reading something which interests them, they are more likely to be able to read it.

3. COMPREHENSION QUESTIONS

These questions should be of two types. They should test the reader's understanding of the text by asking specific detail questions (ie. What is the inside diameter of the cast iron pipe?) and critical thinking questions such as (What would happen if the cast iron pipe were larger in diameter than the code required?)

4. POST READING QUESTIONS

These questions should help the students further synthesize their reading. These can be opinion questions based on the information presented in the text.

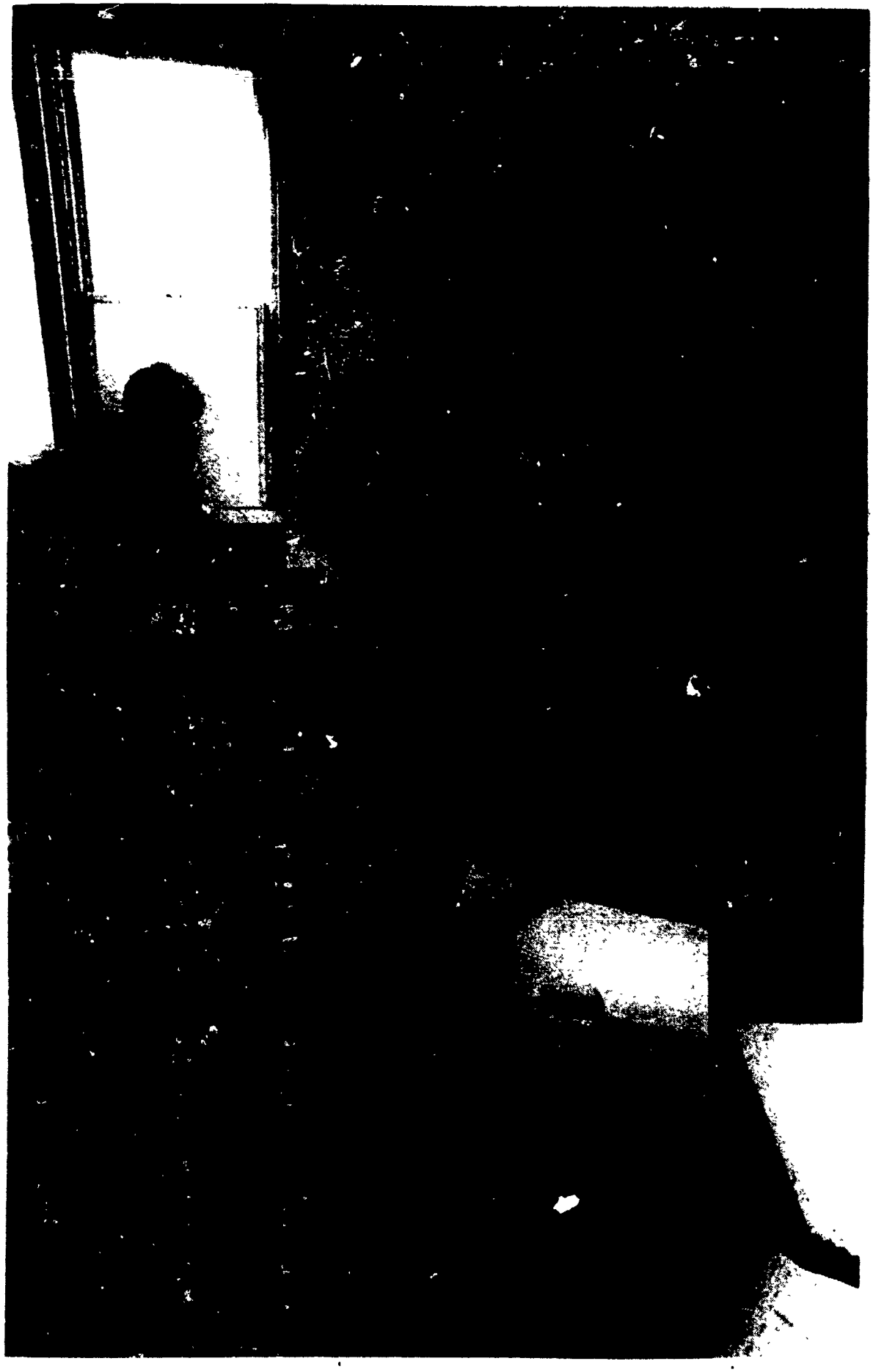
IX. SHOULD I TRY TO TEACH WRITING?

Educators globally from the New Zealander, Sylvia Ashton-Warner to the Brazilian, Paulo Friere, and even Count Tolstoy recognize the importance of the relationship between student/reader and the word. Students need to have some type of emotional attachment to words. Often the very first word they learn is their name. This, naturally has great personal value to them. The message of any group of words strung together without a skemata can be indecipherable even to the most experienced reader. (Imagine yourself reading a NASA report. Would it make sense to you? You may be able to read the actual words but what good would that be if you could not understand them. You have no emotional attachment to them) Research has shown, the best way to form a bond between student/reader and the printed word is through student writing. Through the active process of writing (reading is a more passive activity) students engage in creating thoughts and the language becomes their own.

X. HOW CAN I TEACH WRITING?

Student writing is basic to literacy and can be easily facilitated by journal work. Daily journals are kept by the students. Journals are not graded. Students can write about topics of their choice or assigned ones. Some possible topics could be: 1."How to frame a wall" 2. "Explain how hot water gets to the second floor bathroom sink" 3. "How do you wire a three-way switch?" or "What is your favorite thing to do in construction work?" Some educators believe that the topic is not as important as the daily act of writing which will establish a relationship between the student/reader and the printed word. However, journal topics about their trades work reinforces their knowledge of the work. Questions such as the ones suggested help them think through the work process and be prepared for any essay questions which may come later on. Not only can journal writing improve the overall reading skills of the reader but it gives the student a private monitor of personal progress facilitating confidence and self-respect.

Carpentry



Lesson 1 (Both ESL and Native Speaker)

Materials needed: newsprint, markers.

I. Introduction
   Students and teacher get acquainted

II. Generate class discussion
   1. What is construction literacy?
   2. What is its scope?
   3. What does one need to know to be "construction literate"?

(Teacher writes responses on newsprint and directs discussion to include any neglected aspects of construction literacy.)

III. Construction Terms
   1. What are some terms or words that might be used on a construction site?

   Class generates list of new words used in the construction trade.

(Teacher writes list on newsprint and directs discussion to include all terms listed in glossary for carpentry. See "Teacher Resource: Glossary of Carpentry Terms". Teacher reviews the meaning of each word as it is mentioned.)

IV. Language Experience Writing

   "How to Frame A Wall"

   1. Students dictate to teacher the process of framing out a wall and she writes the story on the newsprint for all the class to see.
   2. Students read their story out loud.
   3. Students and teacher choose and circle key words or hard words to work with later.

V. Assignment

   1. Students write 5 sentences using new terms and are encouraged to try to incorporate them into their personal vocabularies.

(ESL students need not write their sentences if they cannot but recite them for the teacher and class.)

Lesson 2 (Both ESL and Native Speaker)

Materials needed: newsprint, flash cards.

I. Review new terms for Carpentry

1. New terms come from the list compiled from previous class.

2. Each term on list is discussed to reinforce the word and its meaning.

3. Teacher points to term as it is being discussed so as to reinforce sight recognition.

4. Teacher instructs students to either write or recite sentences using new terms.

5. Sentences are corrected by both class and teacher together (either orally or written on the board.)

II. Concentration (This exercise reinforces the sight recognition and the meaning of the new term.)

1. Teacher has previously prepared 3x5 index cards with the new construction terms written on them. Each card has a mate. One card has the term written on it and its mate has either a picture of the term or the definition of the term or the term written again.

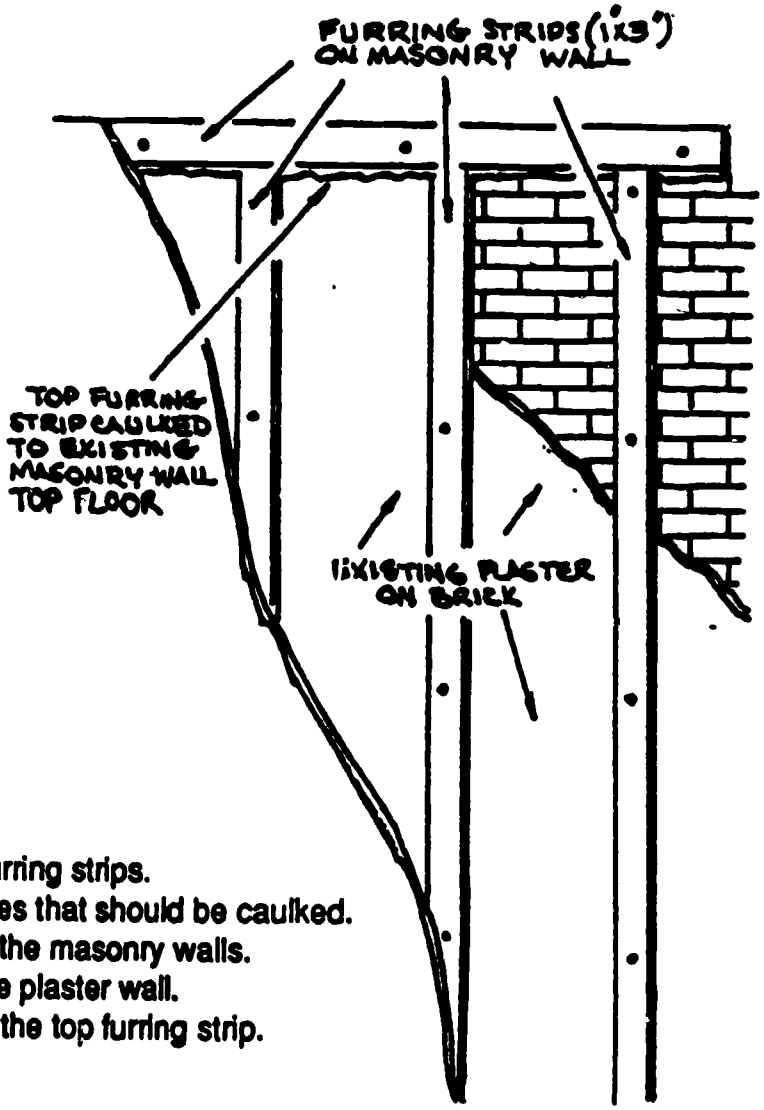
2. All the cards are turned over so that no information can be seen by the students or teacher. The cards are lined up in a gird pattern.

3. Teacher divides students in pairs or teams to play concentration with the flash cards. (If students are very weak in reading skills teacher should group students in teams so that group work can be encouraged.)

4. Taking turns, the student turns over a card and then tries to guess where its mate is located. Then he/she turns over another card. If there is a match the student keeps the pair but if not the student returns the card to its original overturned position. The other students watch carefully or concentrate as each player turns over cards. They try to remember the location of each card so that

they can find a match when their turn comes up. When there is a match the student with the matching pair must make up a sentence using the term in order to keep the pair. The student with the greatest number of cards wins the game.

Exercise for Identifying Parts of a Wall: Caulking for Insulation



Directions

1. Draw X's on the furring strips.
2. Darken in all spaces that should be caulked.
3. Draw triangles on the masonry walls.
4. Draw circles on the plaster wall.
5. Draw a square on the top furring strip.

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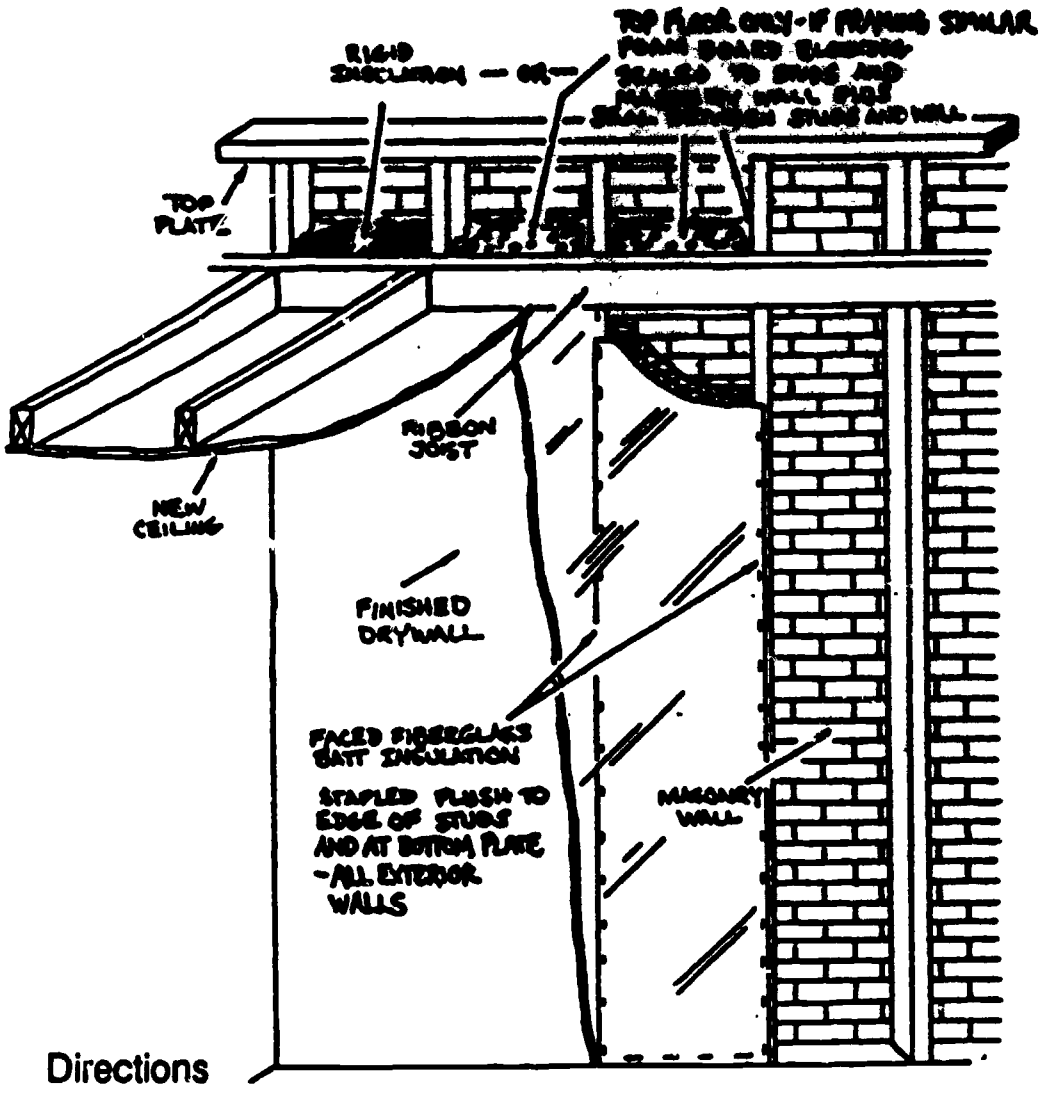
Exercise for Identifying Parts of a Wall: Rigid, Foam and Fiberglass Insulation



Directions

1. Circle the area where the insulation is stapled flush to the bottom plate.
2. Draw an X on the top plate.
3. Darken the area that should be caulked.
4. Draw triangles on the masonry wall.
5. Draw squares where there should be insulation between the studs and the top plate.

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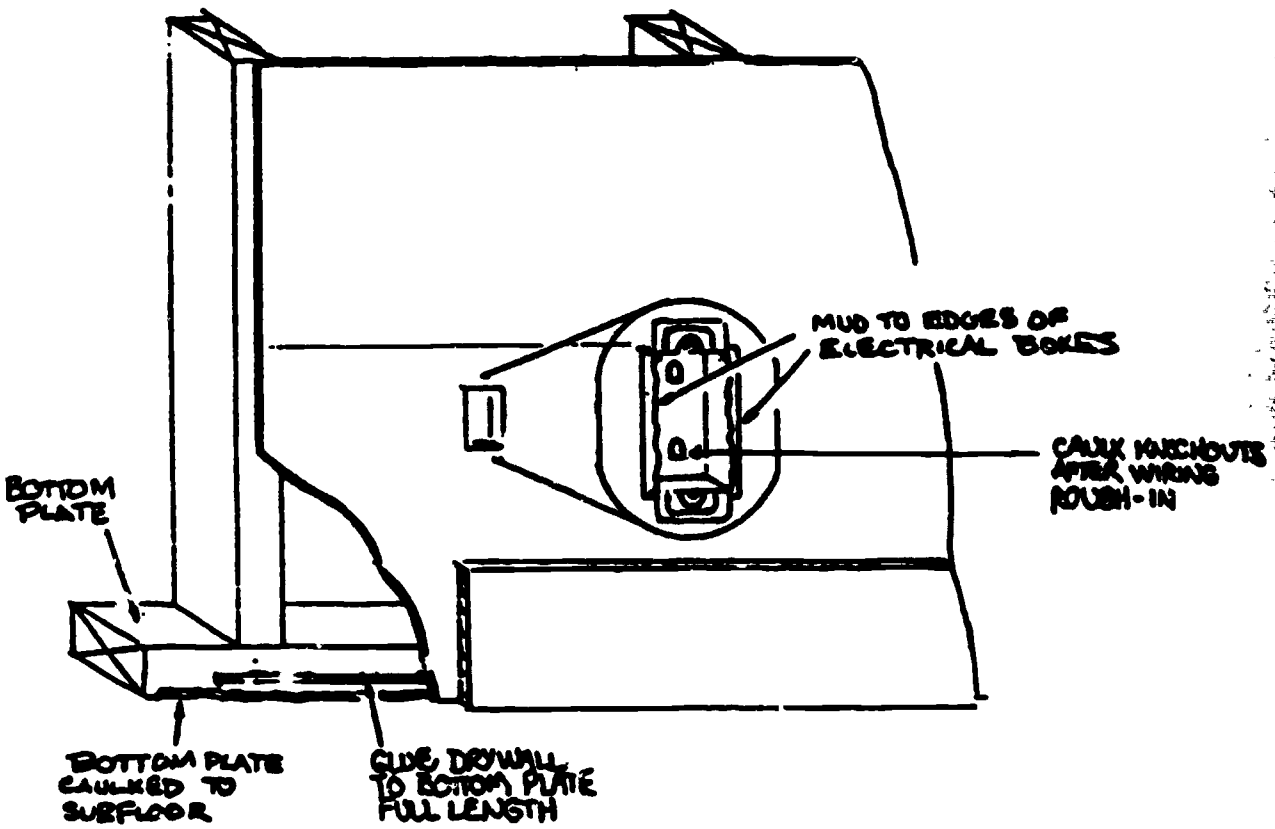
Exercise for Identifying Parts of a Wall: Insulating Electric Outlet



Directions

1. Draw an X on the stud.
2. Darken the area that should be caulked.
3. Draw a circle on the bottom plate.
4. Darken in the area around the electrical box that should be mudded.
5. Draw a triangle on the drywall.

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Carpentry Terms Worksheet

Directions: Draw a line and connect the terms with the appropriate definitions.

1. cleat	lath
2. drywall	patching bricks
3. chicken wire	stud
4. parging	scab
5. mortar	cement between bricks
6. holds weight	sheathing
7. nail at an angle	sheetrock
8. 2x4 used to frame	shortened studs
9. cripple studs	load bearing
10. plywood	toenail
11. underlayment	part of stairs stepped on
12. sole plate	backing
13. nailer	load bearing above door
14. header	bottom horizontal part of frame
15. tread	plywood above subfloor

Word Recognition: Carpentry

Directions: Circle the correct word

Teacher's note: With low level students the teacher dictates the vocabulary word and the student circles the correct answer. Higher level students should work independently.

1. a) hamer	b) hammer	c) hammor
2. a) lath	b) lathe	c) laft
3. a) morter	b) mortir	c) mortar
4. a) underlayment	b) undrlayment	c) underlaymnt
5. a) joiste	b) jost	c) joist
6. a) stude	b) stad	c) stud
7. a) beem	b) beam	c) bim
8. a) header	b) heder	c) hedger
9. a) nail	b) nale	c) naile
10. a) sheathe	b) sheath	c) shithe

Carpentry Word Search

J	O	S	K	N	I	F	S	T	E	A	I	B	T	U	D
B	E	A	M	E	L	A	D	R	U	M	O	J	S	I	S
R	R	O	U	N	D	E	R	L	A	Y	M	E	N	T	U
I	E	A	P	J	K	S	I	F	O	J	O	B	U	N	B
D	A	K	C	R	I	P	P	L	E	O	R	S	F	U	F
G	I	N	S	E	B	T	U	C	S	I	T	U	L	B	L
I	L	M	O	C	J	S	T	U	D	S	A	B	E	C	O
N	O	P	L	A	T	H	B	E	A	T	R	A	K	F	O
G	K	B	E	L	R	K	M	A	L	H	U	P	J	U	R
R	A	C	P	A	R	G	E	L	B	A	T	H	M	N	L
J	B	F	L	C	E	P	N	F	J	N	A	I	L	O	K
O	E	H	A	M	M	E	R	C	B	G	M	C	J	A	M
M	F	A	T	G	B	O	T	H	A	E	A	M	B	E	N
N	I	K	E	L	H	E	A	D	E	R	L	E	F	J	O

Find the following words:

HAMMER
CRIPPLE
BEAM
STUDS
SOLE PLATE
NAIL MORTAR
BRACE
PARGE
LATH
HEADER
UNDERLAYMENT
SUBFLOOR
JOIST HANGER
BRIDGING

Cloze Reading: Wall Assembly

Directions: Fill in the blanks with the correct word. Use the words in the list below.

floor be studs bottom nails square install required wood the

Cut the various stud lengths as indicated by the blueprints. You can save considerable time by using pre-cut studs. Since they are factory trimmed each piece will be identical in length. Place the sole and top plates on edge, far enough apart so that the studs can be install. Be sure the floor is swept clean for this operation. Nail the top and _____ plates to the regular studs. Use 16d nails. Before nailing the door studs, lay them flat on the _____ and add the trimmers. Use 10d nails and be sure the bottoms are aligned.

After the regular and RO studs are in place, _____ the headers, rough sills and cripples. It will be necessary to toenail the cripple _____ which butt the headers. Use 8d nails for toenailing. Box _____ are thinner than common nails and have less tendency to split the _____.

When all members have been install, check the section for squareness. Measure the diagonals which should_____equal. If the wall in not pre-sheathed, install temporary diagonal bracing to keep the assembly _____ while erecting. If the sheathing is to be applied, the bracing is not _____. Tack the assembly to _____ floor, however while sheathing.

Philadelphia Housing and Development Corporation Specs Exercise

Directions: Read the following excerpt from the PHDC Specs and answer the questions.

Carpentry: Lumber shall have a maximum 19% moisture content.

A. Joists shall be of the proper grade, quality and size for its intended use. They are to be install with the crown up and with fire cuts when supported by masonry walls. Also, the joists must rest on solid block or brick.

Notches are not to be made in the middle 1/3rd of joists. Maximum depth of any cut is 1/6th except at the ends where it may be 1/3rd. Install double trimmers and headers at all new or altered stairwells. Install bridging at maximum 8 ft. intervals or at midspan, for spans less than 16 ft. If badly deteriorated or infested joists are to be replaced, they are to be removed entirely. Joists that are not infested and have some remaining strength may remain in place and new joists placed alongside and spiked to the existing joists. New joists must rest on solid inorganic material.

Questions

1. What does it mean to "install joists with crown up"? Why is this important?

2. What should be done if the joists are infested with termites?

3. Should bridging be installed at midspan if the span is 20 ft?

4. What should be done if the old joists are strong and not infested?

5. On what types of material should the joists rest?

B. Subflooring new or replaced shall be 3/4" plywood. Support all unsupported seams with blocking, minimu .x3's. Fasten plywood with annular or threaded nails.

Underlayment in kitchen shall be 3/6", in bathroom 1/2", all other areas 1/4" plywood unless specified otherwise. Use ring-shank nails to fasten down at 6"-8" intervals.

1. What type of nails should be used to fasten the underlayment?

2. Does the subfloor go above the underlayment?

3. How thick should the underlayment be in the bedroom?

4. How thick should the subfloor be in the kitchen?

C. Framing Load bearing studs shall be Standard or No. 3. Nonload bearing may be utility grade. Partitions and framing on the inside of masonry walls may be 2x3's.

Ceiling Framing, Bearing, and Fire Rated partitions shall be 2x4's. Provide top and bottom plates. Plates for bearing and fire rated partitions shall be doubled.

Jack Studs shall be provided at the sides of all new frame openings, also cripples.

Headers shall be double 2x's for openings less than 4 ft., triple for greater.

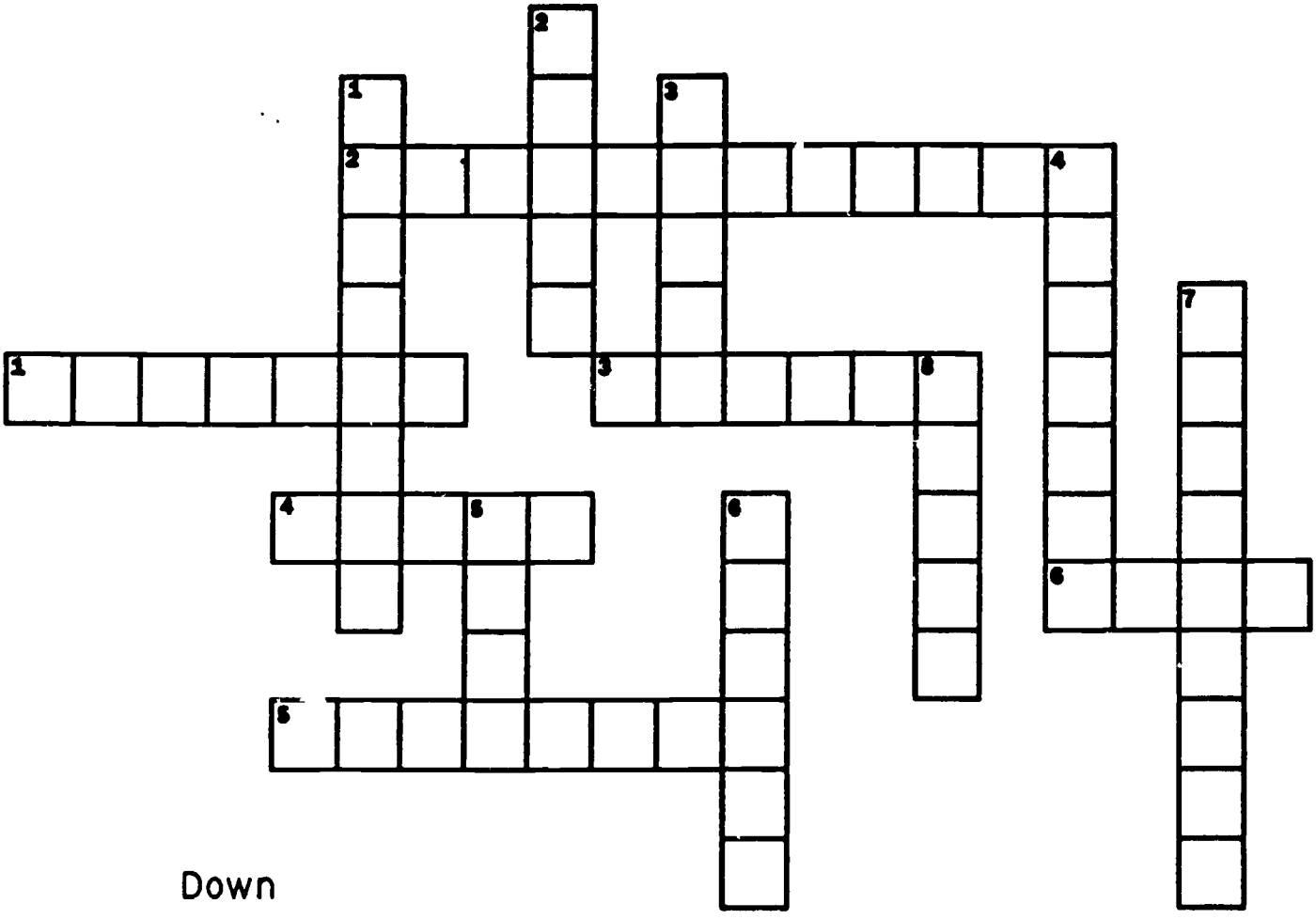
1. Is it possible to use a 2x3 for a load bearing stud?

2. Is it possible to use a 2x4 on a non-load bearing partition wall?

3. When should a jack stud be used?

4. What type of header should be used for an opening greater than 4 ft?

Carpentry Crossword Puzzle



Down

1. Rough flooring laid directly over joists.
2. Scab.
3. Horizontal framing member nailed to top of wall studs.
4. Driving of a nail at an angle to join two pieces.
5. Upright member of wall frame, 2X4.
6. Joist _____, metal bracket used to support joists.
7. Drywall.
8. Vertical member between the treads of stairs.

Across

1. Shorten studs cut to fit above and below wall frame.
2. Material on which a finish floor is placed.
3. Horizontal load bearing support over opening like door or window.
4. Horizontal lumber laid on edge to support floor and ceiling loads.
5. Wood or metal placed between floor joist to stiffen.
5. Wire mesh used to support and adhere to bricks when parging.

JOURNAL EXERCISE

The following are examples of journal writing taken from students at Norris Square. (Please refer to point IX in the Introduction as to the purpose of using journals and their benefits in teaching writing.) This exercise is an example of how teachers can use journal writing in their lesson plans.

The topic was to write about favorite aspects of construction work. "What do you like to do the best in construction work?" These are obviously examples of three different levels of student proficiency. (All of the spelling and grammatical mistakes below were made by the students.)

To use this pedagogical tool, the teacher should collect an in-class writing assignment or journal writing and type it up as a lesson. (She should not include the names of the authors with the writing.) She should give a copy of the collected writings to each student. Then have them work individually or in groups correcting the mistakes in the writing. The students should try to find and correct their own mistakes and those of their classmates and write the corrections on the text. Then, together as a class, the students and teacher review the corrections. The teacher supplements the corrections the students have found. This exercise helps students learn how to monitor their own writing and exposes them to the process of rewriting. Very often students are not familiar with the rewriting process and need the reinforcement this lesson can provide.

Let's Correct our Mistakes!

I like to do alot of things in construction. I would like to learn more about blueprints or architectural, but I like to do framing. You start with demolition work which I don't like and after that the framing start by looking at the building to see which wall to start with then you look at the blueprints to see the measurment to be mark on the floor. Wait I almost forgot the subfloor have to go in first then to mark the floor to see where the wall go to do the framing. You start by measuring for16" inch o/c stud on the plate and sole plate. Then you have to remember to put headers and jack stud and that finish the framing for the wall.

****

I like to renovate houses. And the why to start is to see how much trash will be accumulated so that you would no how many dumpster you would have to order. So when you start the demolition . That's the first step. The next step is framing. You have to frame all wall thats needed. Then you start the plumbing and wiring. Next step is to insulate your exposed walls. Then sheetrock and nail. The next step is tapping. Once that's done then you prime the walls for painting.

****

I like install bathroom fixtures. When install vanity 1st thing I do is connect the faucet using plumbing putty. Then connect p.o. plug using plumbing putty. Then connect hot and cold water lines. Then connect trap. To install toilet first you get flange install. Put tile wax. Set the toilet down on the flange. get floor bolt put tank together. Then the water line.

Teacher Resource: Glossary of Carpentry Terms

beam: a structural member of wood, steel or concrete used to support loads between wall or posts.

bearing: part of a building member resting on its supports.

bearing wall: any wall that supports a vertical load as well as its own weight.

bridging: wood or metal pieces placed between floor joists or wall studs to stiffen them.

brace: piece of lumber used to reinforce wall or other framing.

cripple studs: shorten studs cut to fit above or below openings in frame.

corner bead: a strip of formed sheet metal or metal lath placed over a plastered corners for protection.

drywall: interior wall covering material such as gypsum wallboard, plywood, sheetrock or other forms of paneling, usually in large sheets.

furring strips: strip of wood applied to a wall or other surface to even it and serve as a base for fastening finished materials.

header: horizontal load-bearing support over an opening such as a door or a window; also a supporting member placed at the head or foot of an opening.

joist: a horizontal timber laid on edge to support floor and ceiling loads.

joist hanger: metal bracket used to support joists.

lath: wire mesh used to reinforce old brick work and adhere new mortar with old.

lath: material of wood, metal, insulating board fastened to a building frame, originally used as a plaster base, but mostly used now as a form of shim stock.

lintel: a horizontal structural member providing support over an opening.

mortar: cement between bricks.

masonry: stone, brick, concrete block and similar building components bonded together with mortar to form a mass.

nailer (backing): strip of wood which serves as backing into which nails can be driven.

notch: a crosswise rabbet at the end of a board.

on center: measurement of spacing for studs, rafters, joists, posts and other members from the center of the next.

partition wall: interior wall separating one area of house from another

plate: (top plate): horizontal framing member nailed to top of wall studs: it supports the ceiling joists and roof rafters.

parge: patch work to reinforce decaying bricks

penny: originally, the price per hundred nails, but now the term serves as a designation of length. Abbreviated "d".

plumb: vertical.

R-value: a measure of insulating quality. The higher the R-value, the better the insulation and the less heating and cooling paid for and lost.

riser: vertical board closing the space between treads of stairs.

rabbet: a rectangular longitudinal groove cut in the corner edge of a board or plank.

rigid insulation board: urethane, fiberglass, or Styrofoam

subfloor: the rough flooring laid directly over joints

sole plate: bottom horizontal member of wall frame.

stud (2x4): upright member of frame wall

sheathing: structural covering of wood board, plywood or other material used over the studs or rafters of a building.

stinger: the support on which the stairs treads rest.

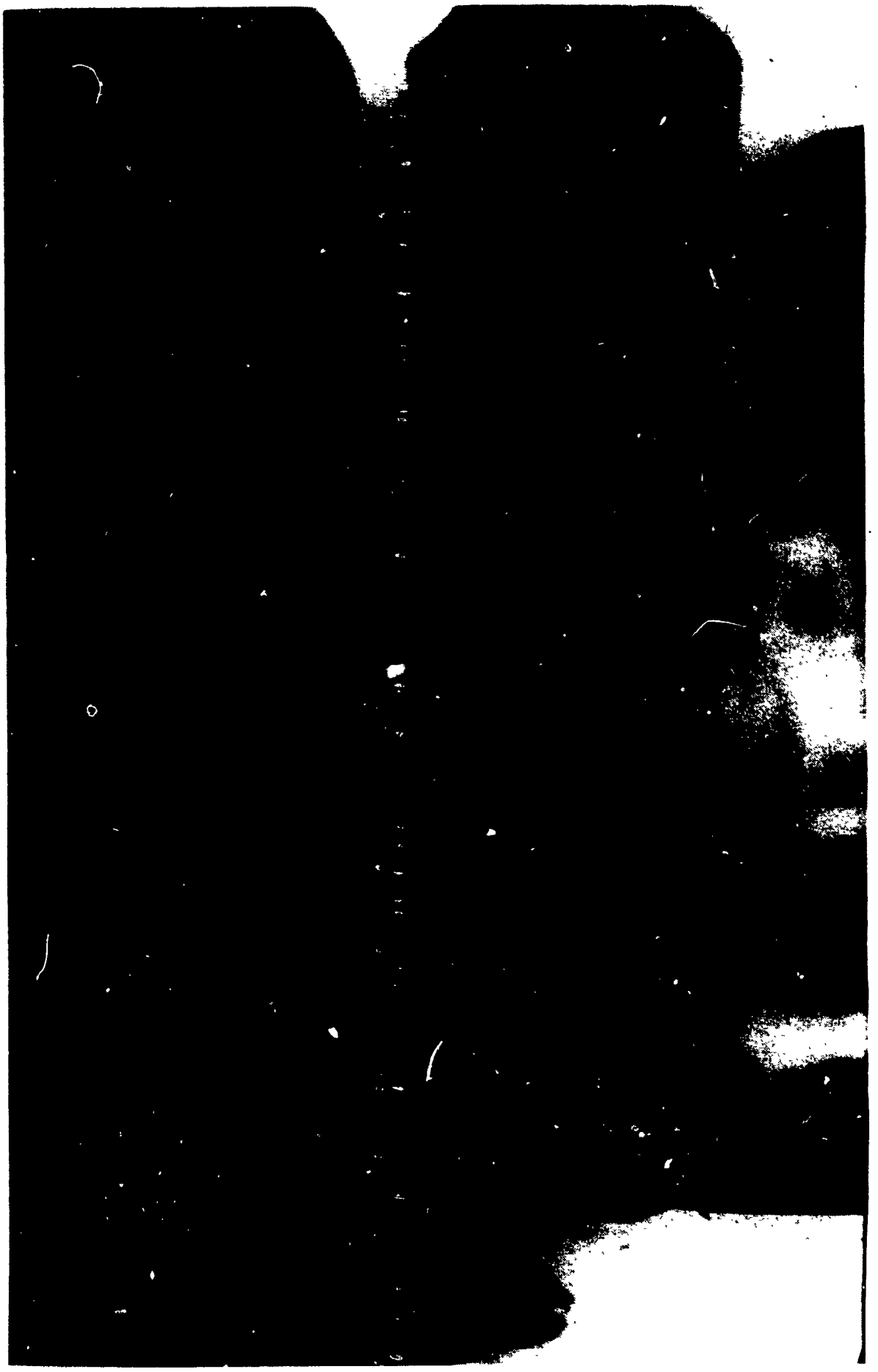
tongue and groove (T&G): shapes cut into the edge of boards

tread: the horizontal board on a stairway on which the foot is placed.

toenailing: driving a nail at a slat to the initial surface.

underlayment: the material on which a finished floor is placed composition board used to insulate.

Plumbing



Lesson 3 (ESL Role Play)

I. Role Play
(This exercise reinforces new vocabulary and facilitates language use)

1. Teacher divides students into small groups or pairs.

2. Teacher gives the same or different situations to the groups and explains that each group should work together and write a script for the situation and will have to perform it for the class. (If the students have a low level proficiency in English the situation should be the same for the whole class.) The role play situations should be relevant to the project. If, for example, the crew will be installing new vanities in the building on which they are working the situation could be a plumbing supply store and the students could play the roles of the store manager and customer. The customer will have to buy all the supplies needed to install a vanity.

3. The teacher then asks the students to generate a list of probable vocabulary words that would be needed in such a situation. The teacher supplements the list with words that the students do not mention. Depending on the level of the students different words or verb phrases will be needed such as " How much does a tin of flux cost? Do you have any 45 degree elbows to fit M type copper pipe? etc."

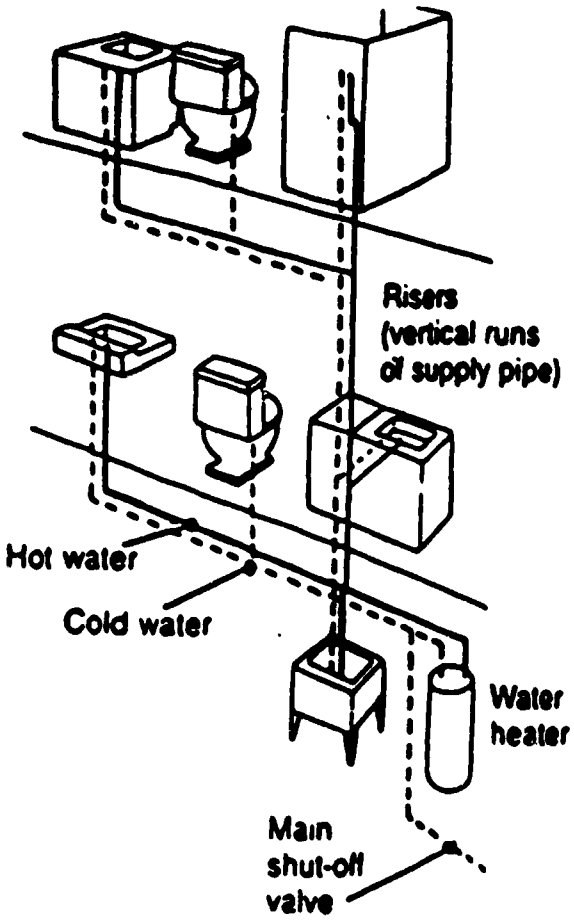
4. Then the teacher has the students work independently in their groups to write the script. The target language (English) must be used during the group work. The teacher should circulate around the room to assist the groups. The students may have additional questions about vocabulary.

5. Then the students perform their skits for the class.

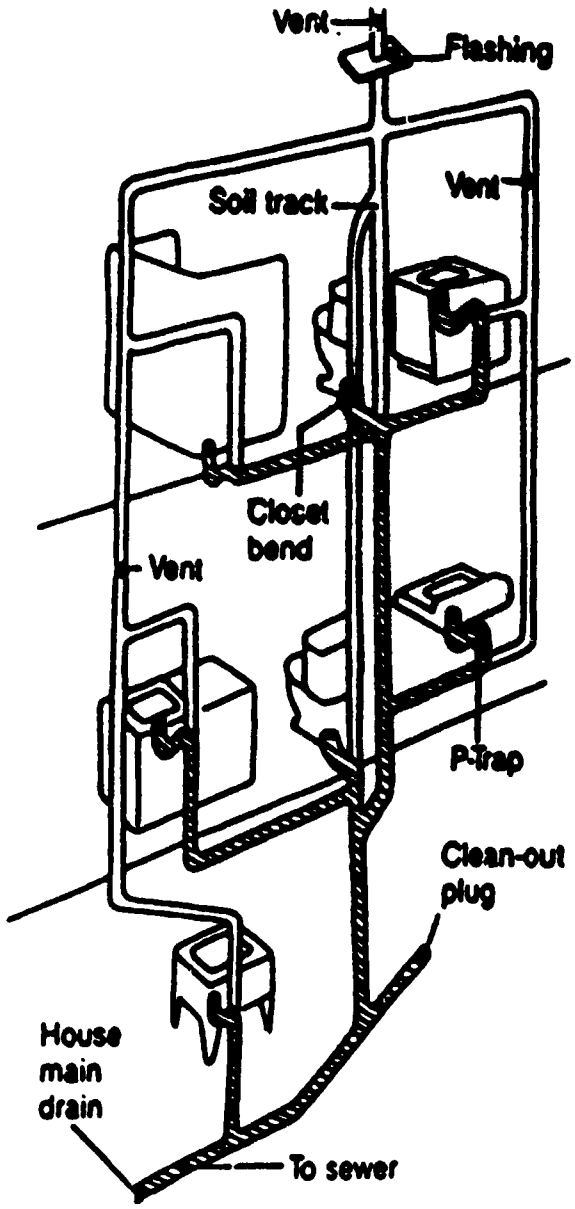
6. (The teacher can evaluate the student performances looking for clarity of pronunciation, verb tense usage, new vocabulary usage, etc. if she has previously informed the students that this assignment will be evaluated.)

Plumbing Diagram Overview

Water Supply Lines



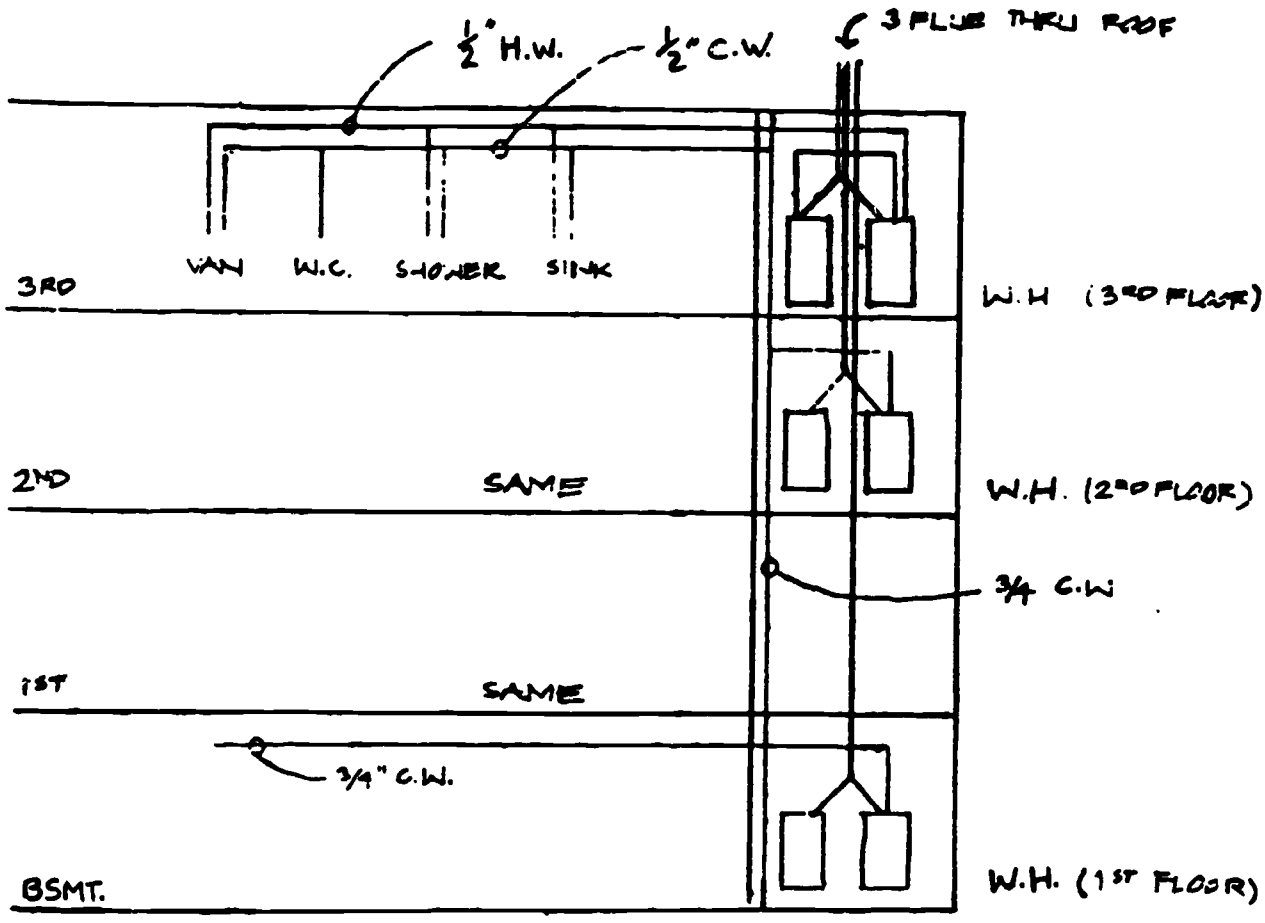
Vent/Drain Lines



Directions

1. Draw a circle around the hot water heater.
2. There are four p-traps in the vent/drain lines diagram. Find and circle them.
3. Trace the hot water supply from the hot water heater to the second floor vanity.
4. Draw a circle around the clean-out plug.

Copper Water Riser Diagram



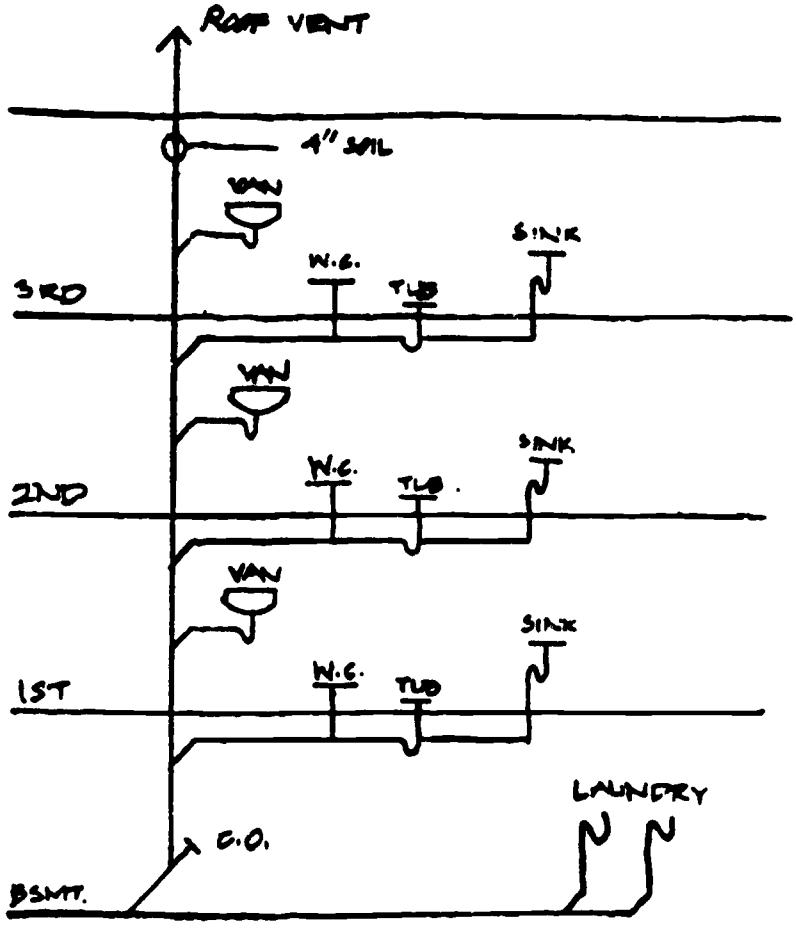
Directions

1. Write the full words for the following abbreviations.
   W. C.
   H. W.
   C. W.
   W. H.

2. What is the inside diameter of the cold water line from the main supply to the kitchen sink?

3. What is the inside diameter of the supply line that feeds the hot water heater?

Waste Diagram



Directions

1. Write the full words and the common terms for the following abbreviations:
   van
   W. C.
   C. O.
   BSMT.

2. Why would the archetict have both a "van" and a "sink"?

3. What is the purpose of the roof vent?

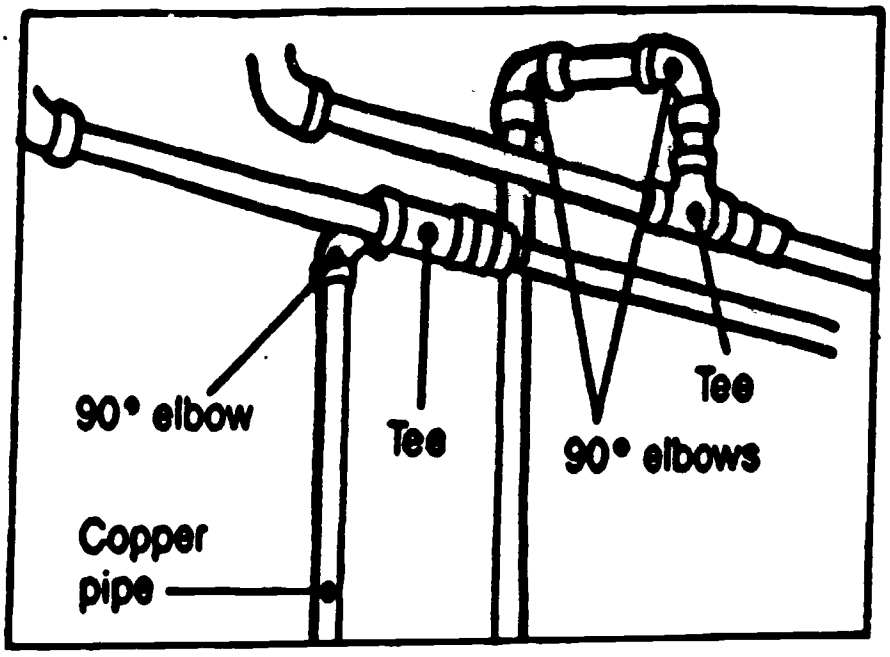
Plumbing Word Search

T	E	F	L	O	N	T	A	P	E	N	B	L	Q	O	S	J	A
S	H	I	P	J	A	B	I	X	J	T	R	F	E	N	T	R	S
W	D	R	A	I	N	P	K	R	H	U	C	F	U	R	O	S	E
Y	A	G	E	L	E	M	O	A	B	F	O	R	Y	W	P	V	F
E	C	F	W	A	T	E	R	C	L	O	S	E	T	S	V	H	O
A	S	X	U	O	D	W	O	H	U	N	I	N	V	M	A	E	R
N	B	T	F	I	N	L	B	R	C	Z	N	B	Q	F	L	U	X
L	A	V	A	T	O	R	Y	O	O	A	K	U	M	A	V	Q	N
X	W	A	B	C	O	E	I	M	O	N	S	B	T	S	E	L	O
J	P	N	S	A	K	L	S	E	A	T	O	T	E	R	E	J	A
Q	L	I	N	E	R	C	O	P	P	E	R	L	I	E	D	L	M
W	F	T	U	B	T	A	R	I	A	E	D	J	T	R	A	P	N
Z	R	Y	S	C	B	N	L	P	A	B	Q	S	E	N	O	U	H
G	O	F	J	S	O	L	D	E	R	R	T	O	E	M	F	N	R

Find the following words:

CAST IRON	CHROME PIPE	COPPER
DRAIN	FLUX	LAVATORY
LINE	OAKUM	PIPE
RUNS	SOLDER	STACK
STEEL	STOP VALVE	TEE
TEFLON TAPE	THREAD	TRAP
TUB	VANITY	WATER CLOSET
WYE		

Draw Your Own Diagram



You Be The Artist!

Using the diagram above draw a plumbing diagram of your own which includes:

1. Tee 3. 90 elbow
2. Wye 4. 45 elbiow

Your should NOT copy the above diagram, but use your imagination to create your own.

Pre-reading Exercise for General Overview of a Plumbing System

(Teacher leads discussion about Plumbing)

1. What do you know about plumbing?

2. What do you know about a plumber's work?
   A. How can one become a plumber? (Licensing, etc.)
   B. How much does a plumber earn?

3. How many different types of pipes can you name?

4. What is PVC?

(Teacher reviews and clarifies Suggested Vocabulary)

Suggested Vocabulary

-join (in reference to plumbing)
-threads
-solder (sweat-solder)
-chemical solvent
-diameter
-fittings
-Municipal water system
-branch
-meter

General Overview of a Plumbing System (Reading)

A plumbing system may be made of four different types of pipe: galvanized steel, cast iron, copper, and maybe some plastic, installed when a bathroom was recently remodeled. A home built during the turn of the century may have lead pipe inside of the walls. Each kind of pipe is joined together differently. Steel is joined by threads, cooper is soldered, and plastic takes a chemical solvent. For all the twists, turns, connections with fixtures, and reductions in diameter, there are countless numbers of fittings.

Despite complications, more homeowners are attempting a wider variety of plumbing jobs. The fact that master plumbers charge over $50 an hour provides a powerful incentive. Plastic plumbing allows you to run piping without having to learn the art of sweat-soldering. In fact, the major obstacle for using plastic is not skill, but law. A few local building codes still prohibit its use.

A home plumbing system is basically simple: water enters the home through a black steel pipe or galvanized steel pipe. Municipal water systems usually connect to a water meter mounted between two valves. A branch of the supply line from the meter is connected to the water heater. The outlet line from the water heater runs parallel with the cold water supply line. This serves the various fixtures and appliances throughout the home. These supply lines are usually under 50-60 psi (pounds per square inch) pressure. They are made of either copper or chlorinated polyvinyl chloride (CPVC) plastic pipe.

Questions

1. How many different types of pipe are there? List them.

2. What is the advantage of using plastic CPVC pipe?

3. What is the disadvantage of using plastic CPVC pipe?

4. What type of pipe is used to carry the water into the home?

5. What does psi mean?

Adapted from Vila, Bob, Abram, Norm, Byrne, Stewart, and Stains, Larry. This Old House Guide to Building and Remodeling Materials. New York: Warner Books, Inc. 1986. p.225

Pre-reading Exercise for Types of Pipes

(Teacher leads discussion)

1. What is cast iron pipe? What is it used for? How is it joined?

2. Has anyone ever used steel pipe? Where and why?

3. What does it mean to thread a pipe?

4. What do you know about copper pipe? How is it joined?

(Teacher reviews and clarifies Suggested Vocabulary)

Suggested Vocabulary

-hubs/hubless
-sealed
-molten lead
-oakum
-metal clamped neoprene gaskets
-lengths
-threaded fittings
-supply and DWV lines
-coils
-runs
-joints

Types of Pipes (Reading)

Cast Iron Pipe

Cast iron pipe is seldom used in indoor plumbing anymore. But, it is still available in diameters from 2" to 4" and lengths of 5' to 10'. It is used only in the DWV system and underground near tree roots or beneath driveways. It comes in two grades: Service and Extra Heavy.

Old cast iron drainage pipes had wide ends called "hubs" and were sealed together with molten lead and oakum. Today's iron pipe is "hubless" and is joined together with metal clamped neoprene gaskets.

Galvanized Steel Pipe

Galvanized steel pipe is used as a main water supply line and in steam and hot water heating systems. It is sold in sizes from 1/8" (inside diameter) to 12". Each end of a steel pipe is threaded, and lengths are joined by threaded fittings. All threads are made to IPT (International pipe thread) standards. If you're working with galvanized steel pipe you don't have to cut the threads yourself. You can ask the plumbing supply store that sells you the pipe to cut the pipe to length and cut threads in the ends.

Copper Pipe

Copper pipe is common, both in supply and DWV lines. Type M is the thinnest type. It is the most frequently used as a supply line, usually in 1\2" diameter. Type M is rigid only , but types K and L come in both hard and soft versions. The soft type is so flexible it can be wound in coils. It permits longer runs without joints and is therefore easier to install.

Though soft copper tubing is easier to bend, you should not bend it without the aid of a spring-like tube bender. Tube benders are available in the same sizes as copper pipe; be sure to get the right size.

1. What are the two differences between old cast iron pipe and today's iron pipe?

2. What are the 3 uses of galvanized steel pipe?

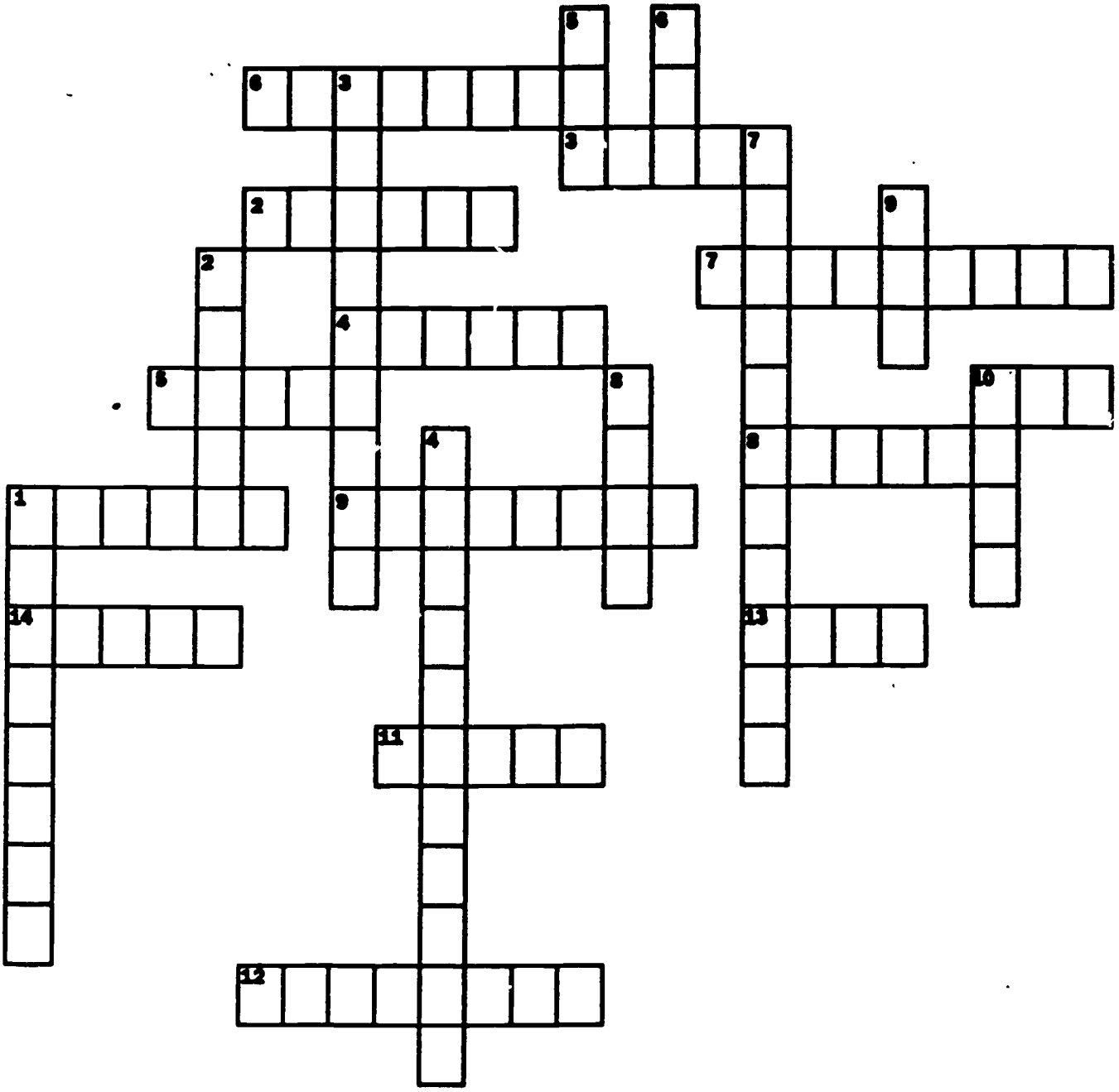
3. How is galvanized steel pipe joined?

4. In what way is copper pipe, type K and L different from galvanized steel and cast iron pipe?

5. When bending copper tubing what is the most important tool needed?

Adapted from Vila, Bob, Abram, Norm, Byrne, Stewart and Stains, Larry. This Old House Guide to Building and Remodeling Materials. New York: Warner Books Inc. 1986. p.226-227

Plumbing Crossword Puzzle



PLUMBING CROSSWORD PUZZLE

ACROSS
1. glue, fasten together
2. sink supported by a cabinet
3. a pipe fitting with two openings that change the direction of the line (usually 45 or 90 degrees)
4. sweat- _ _ _ _ _ _
5. connection/ a point at which two pipes are joined
6. sink connect to the wall (usually found in bathrooms)
7. a valve that controls the flow of water
8. a metal used in supply lines
9. a plug in a trap or drain that provides access for the purpose of cleaning an obstruction
10. a t-shaped fitting that has three openings used for creating branch lines
11. a loose hemp or fiber used to caulk seams in cast iron pipes (used with molten lead in hub pipes)
12. a type of metal used primarily in drainage,soil, and underground pipe
13. a place to wash dishes in the kitchen
14. a type of metal often used in gas lines

DOWN
1. put together
2. to clean or polish by scrubbing vigorously
3. the upper portion of the main soil stack that allows harmful gases and odors to escape through the roof
4. the wax ring used to seal in the installation of a toilet
5. the y-shaped fitting that has three openings used to create branch lines
6. cast iron pipe fit together with molten lead must be joined at the ____
7. toilet
8. the paste used on copper pipe and fittings to assist in the soldering process
9. rigid white colored plastic pipe
10. a curved section of a fixture drain designed to hold water as a seal against sewer gases that could otherwise enter the house

Teacher Resource: Glossary of Plumbing Terms

bend: a change of direction in piping.

branch: any part of a piping system other than main, riser or stack.

CVPC: abbreviation for Chlorinated Polyvinyl Chloride, a type of plastic used to make pipes that will carry hot water or chemicals.

cast iron pipe: any pipe made from cast iron pipe, usually used in soil lines.

clean-out: removable drainage fitting which permits access to the inside of drainage piping for the purpose of removing obstructions.

coupling: female-end pipefitting used for joining two lengths of pipe.

cross: a pipe fitting having four openings.

elbow: fitting used for making a turn in a direction of a pipe; also known as an "ell", they usually make 45 or 90 degree angles.

female thread: any internal threading.

flux: a chemical substance which prevents oxides from forming on the surface of metal as they are heated for soldering.

fitting: a piping element, other than a valve or pipe, used in joining pipes.

hub: the enlarged end of some types of pipe which fit over the next pipe section.

joint: the point of connection between two piping elements, whether screwed, bolted, welded or soldered.

K grade copper pipe: copper pipe suitable for installation underground.

lavatory: a fixture designed for washing face and hands that is usually installed in the bathroom.

M type: the lightest type of rigid copper pipe.

main water line: the large water supply pipe to which branches are connected.

male thread: external thread on pipe fittings and valves, for making screwed connections.

oakum: loosely woven hemp rope which has been treated with oil or other water-proofing agents. Used to caulk joints in hub pipe and fittings.

PVC: abbreviation for Polyvinyl Chloride, a type of plastic used to make pipes.

pipe joint compound: putty-like material used for sealing threaded pipes.

plug: screwed fitting for shutting off a taped opening.

vent stack: a vertical vent pipe installed primarily for the purpose of providing circulation of air to and from any part of the drainage system.

run: one or more lengths of pipe which continue in a straight line.

shut-off valve: a valve installed in a waterline wherever a cut off is required.

sink: a fixture commonly used in a kitchen or in connection with food preparation. It holds a small amount of water for a variety of cleaning tasks.

solder: metal alloy composed of tin and lead used to join copper fittings and pipe.

sweat-soldering: method of soldering in which the parts to be joined are first coated with a layer of solder, then joined while exposed to heat.

soil pipe: any pipe that conveys the discharge of waterclosets or fixtures having similar functions, with or without the discharge from other fixtures.

street ell: elbow fitting with one male and one female end.

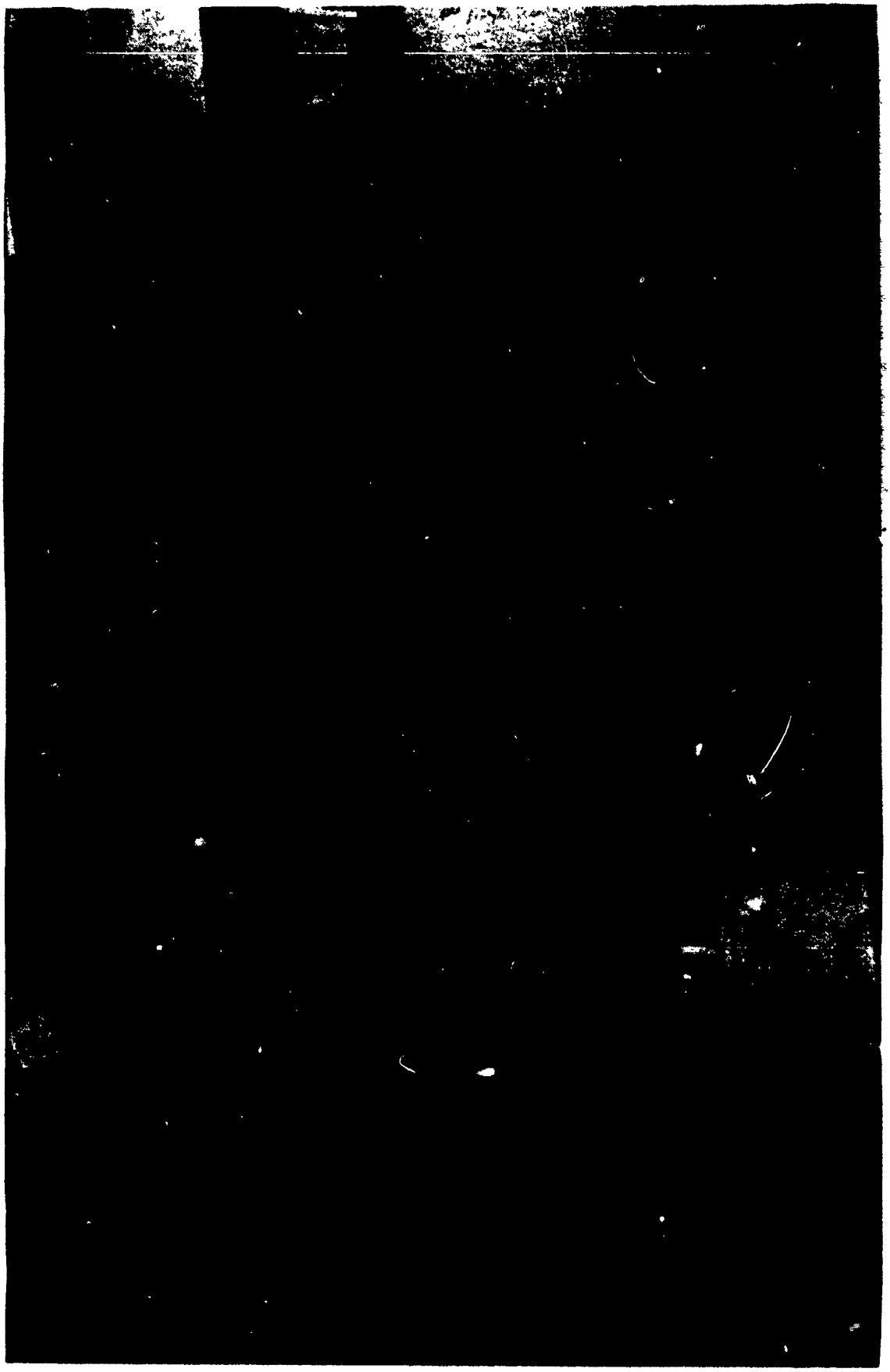
tee: three-way fitting shaped like the letter T.

trap: a fitting or device designed to provide a liquid seal that will prevent the back passage of air without materially affecting the flow of sewage or waste through it.

water riser pipe: a water supply pipe which rises vertically from a horizontal pipe.

Y or wye: a fitting which is in the shape of the letter Y.

Electrical



Lesson 4 Student Questions (Native Speakers with low level reading skills)

Materials needed: Teacher should select a reading text that is relevant to the course work. (See Bibliography for suggestions) The text should challenge the students but not overwhelm them.

Following the instructions in point VII in the Introduction she should prepare the lesson for the students by:

1. Generating discussion about the topic through pre-reading questions.
2. Preparing an pre-reading vocabulary list and making sure the students understand any new vocabulary.
3. Giving them the text to read with the instructions that they will have to write comprehension questions of their own for their fellow students.

Student Questions

Giving students the exercise of writing their own questions can be beneficial for several reasons. First, it encourages the students to be active rather than passive learners. Secondly, it can demonstrate to the teacher the level of comprehension the students have achieved and if they are focusing on the main ideas of the text or not. And thirdly, it can provide an opportunity for a supplemental grammar lesson using their common mistakes as the basis for the lesson.

The teacher asks the students to read the article and write three questions about the reading that test reading comprehension. The teachers should remind the students to try to pick out the most important ideas in the reading to base their questions on. At this point she can encourage the students to make a habit of questioning themselves whenever they read to test their reading comprehension.

Next, teacher divides the class into pairs or small groups and has the students quiz each other. After group work, teacher leads discussion about the questions (i.e. what constitutes a good or bad question, for example, is question # 2 essential to know?) Additionally, she can take the opportunity to discuss grammar issues at that time or collect the questions and write them up for a future class.(Examples follow after questions 1,4,and 5)

The following are some of the questions my students wrote as a sample of student work.

Student Questions for Review

1. What do GFI stand for? (Have student correct does for do)

2. What year was the National Electric Code formulated?

3. True or False
   To see if your system is grounded and protected you should call the company.

4. What year the first grounding? (Have students correct question "When was the first grounding?")

5. What was one of the latest development in shock prevention? (Have students add /s/ to the word development)

6. Among the kinds of protection now employed what safety measures were used for doorbell switches?

7. What was the primary basis for using the 3 prong plug?

8. What was one of the first grounding measures by design?

WORD RECOGNITION: ELECTRICAL

Directions: Circle the correct word

Teacher's note: With low level students teacher dictates vocabulary word and student circles the correct answer. Higher level students should work independently.

1.	a) watt	b) wat	c) what
2.	a) vault	b) valt	c) volt
3.	a) circut	b) circuit	c) circute
4.	a) fuse	b) foose	c) fusse
5.	a) ampere	b) ampear	c) amper
6.	a) flooresent	b) fluorescent	c) florescent
7.	a) generator	b) generater	c) genorater
8.	a) electrans	b) electruns	c) electrons
9.	a) extention	b) extension	c) extenshun
10.	a) curent	b) cerrent	c) current
11.	a) pliers	b) plyers	c) pliyers
12.	a) meeter	b) meter	c) miter
13.	a) splece	b) spliece	c) splice
14.	a) killowatt	b) kilowatt	c) kilowat
15.	a) conduckter	b) conducter	c) conductor

Electrical Word Search

A	P	R	I	G	P	J	N	A	S	T	U	G	E	T	E	V	C	U	R	T
K	I	L	A	S	M	O	K	J	O	L	F	R	N	Y	W	U	O	F	O	L
S	G	Q	T	E	S	T	E	R	Y	L	M	O	C	I	R	C	K	L	W	T
P	T	U	A	C	L	Y	N	A	I	M	Q	U	K	L	A	E	J	U	T	E
R	A	I	Q	A	G	E	H	F	U	O	F	N	O	U	F	G	K	O	B	F
M	I	R	A	B	T	R	C	E	V	I	C	D	U	S	T	E	L	R	C	J
A	L	K	I	L	O	W	A	T	T	N	B	W	L	B	L	A	O	E	A	B
B	V	Y	G	E	M	E	T	E	R	L	Y	F	G	J	O	F	U	S	E	O
R	U	W	I	T	S	M	E	D	B	I	K	G	H	U	P	U	E	C	B	E
S	N	M	O	U	N	T	I	N	G	S	C	R	E	W	S	T	I	E	L	K
J	O	A	K	G	L	M	A	O	E	V	U	I	T	S	E	S	R	N	E	Y
F	H	W	O	A	M	P	O	Q	L	A	P	C	T	B	U	W	A	T	T	F
L	J	C	B	O	G	A	M	P	E	R	E	F	J	Y	V	W	U	N	S	G
A	Q	U	U	T	S	R	I	V	C	E	O	G	I	H	G	K	L	O	B	B
O	B	C	I	R	C	U	I	T	T	W	A	T	S	W	I	T	C	H	R	O
U	E	N	O	S	R	M	E	E	R	F	N	O	P	I	T	S	L	F	E	R
T	A	M	R	F	Q	E	R	S	O	N	E	E	Q	R	A	C	H	M	A	L
L	O	C	B	L	E	M	N	B	N	H	O	S	T	E	K	M	U	I	K	M
E	A	U	T	K	L	O	P	T	S	E	R	V	I	C	E	P	A	N	E	L
T	A	U	F	J	E	N	O	P	Q	R	V	B	H	W	O	T	P	E	R	J

Find the following words:

TESTER	WIRE	FLOURESCENT
ELECTRON	SERVICE PANEL	CABLE
AMPERE	KILOWATT	FUSE
ELECTRICITY	OUTLET	VOLT
CIRCUIT	WATT	BREAKER
SWITCH	METER	MOUNTING SCREWS
PIG TAIL		

Electrical Vocabulary Drill

Fill in the blank with the correct vocabulary word.

hot wires	service panel	volt
ampere	kilowatt-hour	conductor
device	grounding wire	Romex
watt	hot wires	

1. _____ is the unit of power, the rate at which a device uses energy.

2. _____ A manufacturer of non-metallic sheathed electrical cable, this name has become a generic term for this type of cable.

3. _____ is the main panel in a house where incoming electricity is divided into branch circuits. These circuits provide electricity to the house.

4. _____is the unit that measures the potential difference in electrical force, or "pressure", between two points on a circuit.

5. _____ is the unit of energy. It measures the total amount of electricity that is consumed.

6. _____ is the wire through which the electricity flows.

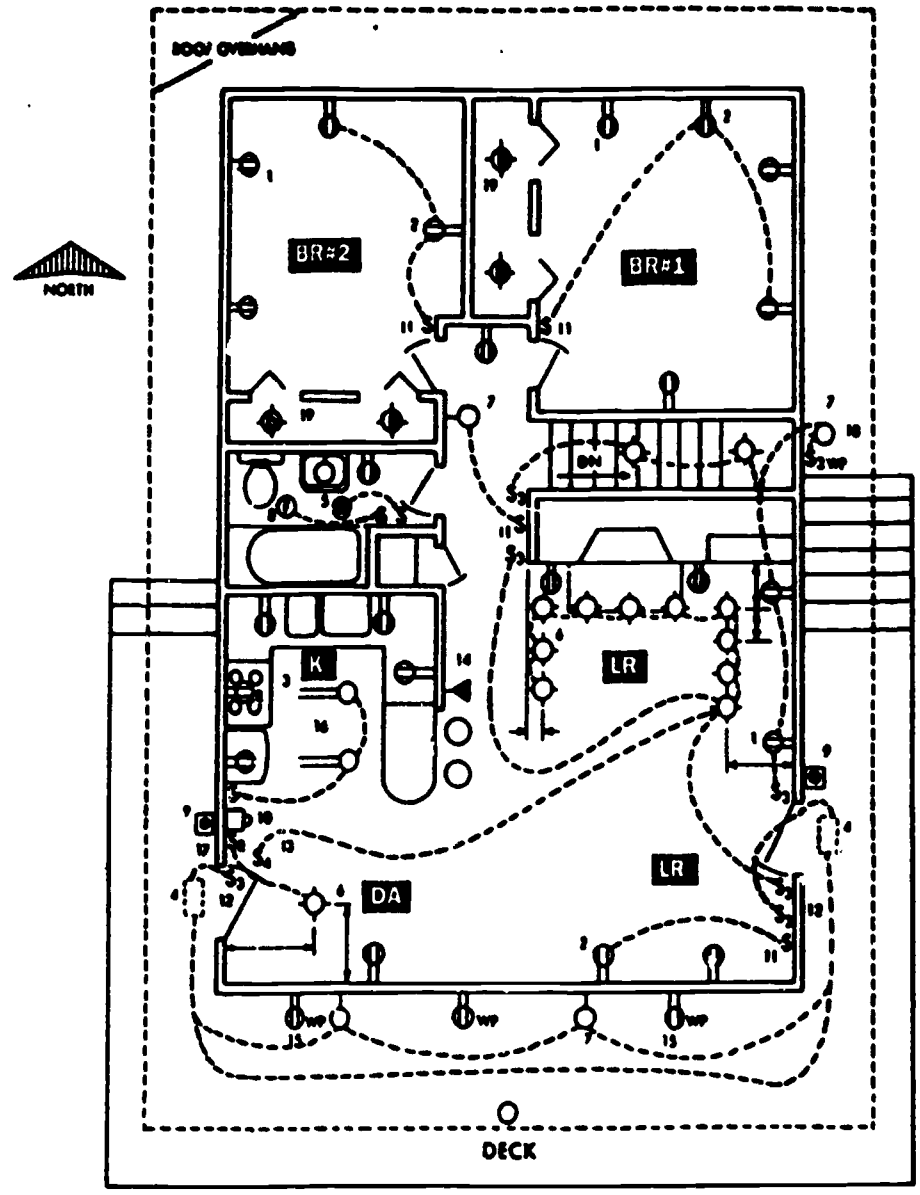
7. _____ is a conductor, usually copper, that grounds a metal component of a circuit. It does not carry current unless the metal component becomes live through some malfunction. Then it returns the current tc the source, thus eliminating a shock.

8. _____ is the unit used to measure the amount of current or the number of electrons, that flow past a given point on a circuit. This amount is measured by the second.

9. _____ is a part of the wiring system that carries electricity but doesn't use it. Switches and receptacles are examples.

10. _____ is any colored wire, except white and green, through which current flows.

Electrical Plan



1		CONVENIENCE OUTLET	10		BELL OR CHIMES
2		SPLIT WIRED CONVENIENCE OUTLET	11	S	SINGLE POLE SWITCH
3		220v OUTLET RANGE	12	S_3	THREE WAY SWITCH
4		FLUSH MOUNTED SOFFIT OUTLET	12	S_4	FOUR WAY SWITCH
5		SPECIAL PURPOSE OUTLET (HEATER)	14		TELEPHONE
6		CEILING OUTLET	15	WP	WEATHER PROOF CONVENIENCE OUTLET
7		WALL BRACKET OUTLET	16		FLORSCENT
8		FAN	17	S_R	DIMMER SWITCH
9		PUSH BUTTON	18	S_{3WP}	WEATHER PROOF THREE WAY SWITCH
			19		CEILING OUTLET W/DROP CORD

Questions for Electrical Plan Worksheet

1. Write the words for the following abbreviations.

   BR _____

   LR _____

   K _____

   DA _____

2. Where are the ceiling outlets with drop cords located in bedroom #2?

3. Where is the single pole switch located in bedroom #1?

4. What are the special features located in the bathroom ceiling?

5. What does the symbol S_2 indicate? Where is one located?

6. What does the symbol S_3 indicate? Where are they most commonly located?

7. How many convenience outlets are in bedroom #1?

8. What type or lighting is used in the kithen ceiling?

9. What is special about the convenience outlets on the deck?

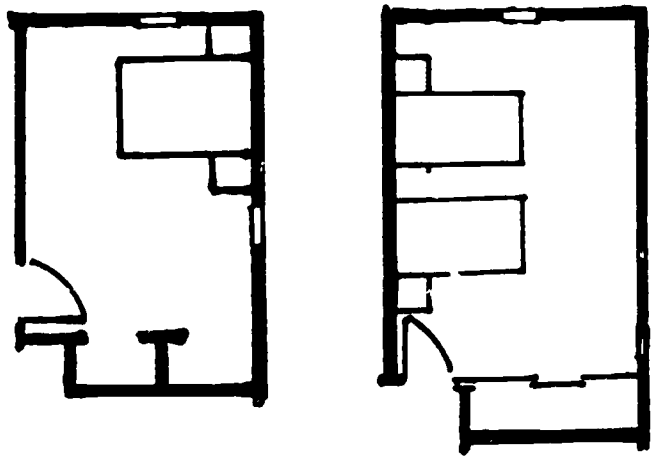
10. Write a question for your classmates using the electrical plan and symbol key.

Draw Your Own Electrical Plan

You Be The Architect

Draw the following symbols in their proper locations in the diagram below:

Convenience outlets
Single pole switches
Ceiling outlets

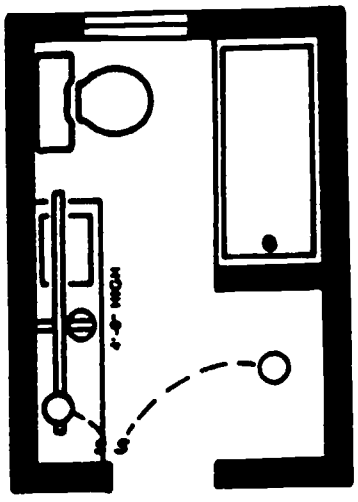


What are the three distinct electrical features of this bathroom?

1. _____

2. _____

3. _____



Teacher Resource: Glossary of Electrical Terms

circuit breaker: an overcurrent device that automatically opens the circuit to disconnect in case of overload or short circuit. Can be switched manually to open the circuit.

conductor: the wire through which the electricity flows.

device: a component of the wiring system that carries, but doesn't use electricity. Switches and receptacles are devices.

fuse: the weak link in a circuit that fails upon overload or short circuit, thereby protecting wires and equipment from damage

ground conductor: a conductor intentionally grounded.

ground: a connection to earth, whether accidental or intentional: or an object that is connected to the earth.

grounding wire: a conductor, usually copper, that grounds a metal component of a circuit. Grounding wires do not carry current unless the metal component becomes live through some malfunction. Then the grounding wire returns the current to the source, thus eliminating a shock.

hot wires: any colored wire, except white and green, not connected to the ground through which current flows. An energized wire, motor, or other equipment. Also called live.

lighting outlet: a connection for a lighting fixture, usually in the ceiling, sometimes in a wall.

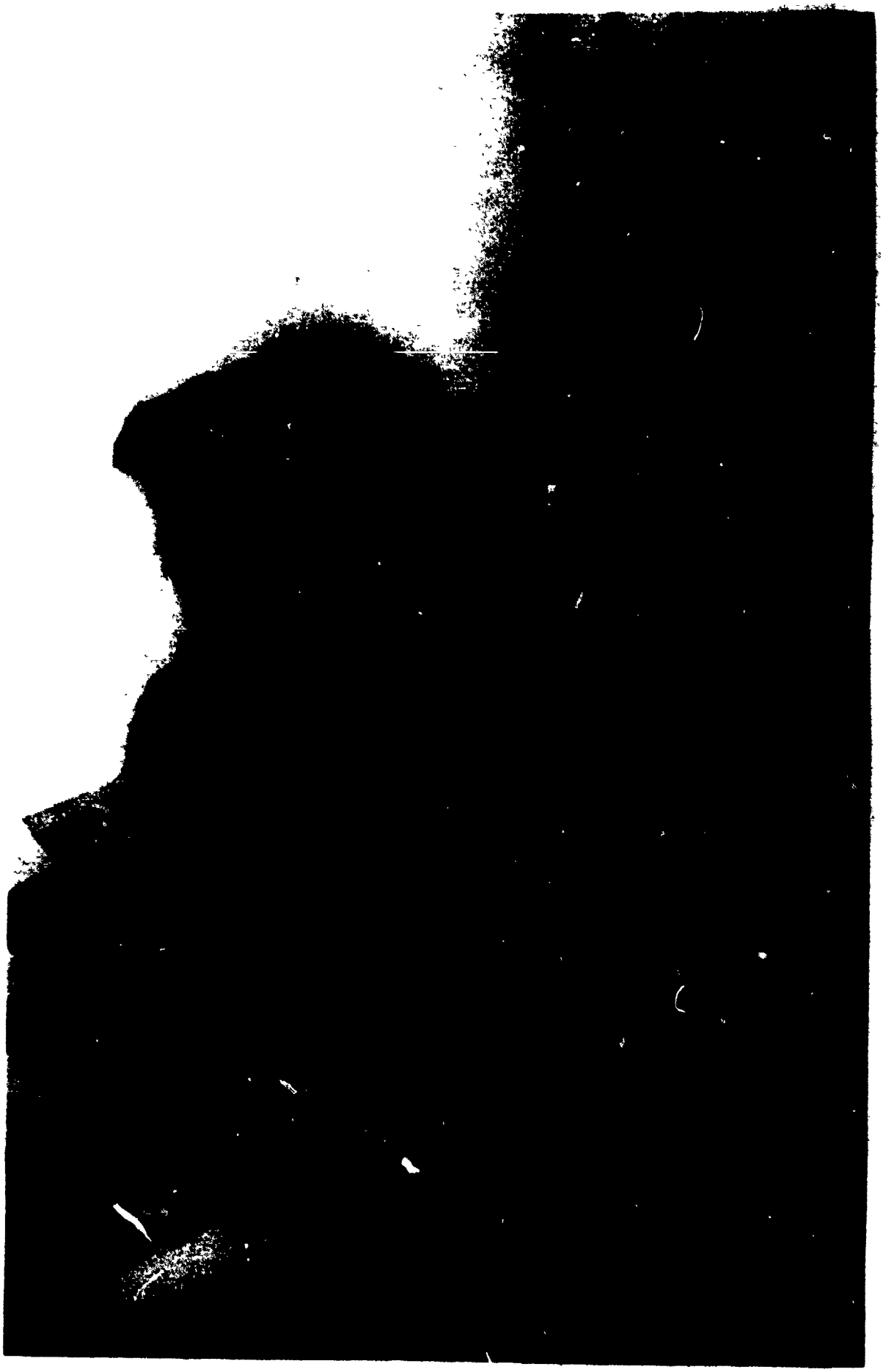
neutral wire: the white wire in a circuit that returns the current to the source under normal conditions.

overload: excess current flow greater than the device or equipment is designed for.

Romex: a manufacturers of non-metallic sheathed electrical cable whose name has become a generic term for this type of cable.

service panel: the main panel in a house where incoming electricity is divided into the branch circuits that provide electricity to the house.

Career Information



Licensing In the Trades

Students in a trades training program must understand that they should plan to eventually work for someone who is licensed in their trade or work towards obtaining their own licensing

Because the process of obtaining a license is quite involved and requires a great deal of knowledge and expertise those who work without the proper licensing run the risk of working without adequate and complete knowledge. When working without a thorough knowledge of the trade, an individual can end up doing faulty work. He runs a greater of being responsible for costly damage, injury to himself or others and even being sued.

Townships and counties have different regulations for licensing in various building trades. To find out what is required in county contact the Department of Licensing and Inspection at the local City Hall or Township Public Service Facility (sometimes this is a Police station). Remember if you want to work in more than one township regulations vary. Townships do not always accept licensing from other townships because their building codes and other requirements are different.

Licensing Requires:
1. Payment of a fee
2. Letters of Recommendation
3. On the job experience and classroom training
4. Passing a test.
5. Time for clearance of all the paperwork

Carpentry does not require licensing. Plumbing and Electrical work does, as well as some other building trades such as masonry and roofers.

Unlicensed and licensed tradesmen can join join trade unions and trade associations. Unions offer worker benefits, protection and apprentice training programs for those who need it. Trades associations keep workers up to date with such things as changes in local building codes.

Remember that permits of any kind are not issued without the proper licensing by those in charge of the project.

Obtaining A Job

News of trades jobs is often passed by word of mouth. In some situations it will be very useful for students to have a resume and a personal data sheet available. (Personal data sheets contain information needed when applying for licenses.) What follows is some information about resumes, data sheets and job application forms.

Resume

When you apply for a job, it is helpful to have a one page summary of your qualifications. This summary is called a resume. It should be attractive and neatly typed, and contain the following information.:

1. Full name

2. Address

3. Telephone number

4. Work experience (in reverse chronological order; most recent job first.)

5. Education

6. References

7. Personal information: health, martial status, age, interests, (this entire item is optional).

A teacher in your trade training program can help you prepare a resume. Here are two samples.

RESUMES

Sample #1

HAROLD BROWN

123 Main Street
Philadelphia, PA 19107
(215) 712-3344

EXPERIENCE: Auto parts clerk, Pinehurst Buick Company, 144 Pinehurst Blvd., Philadelphia, PA. Started February 1, 1964. Still employed at this job.

Gas station mechanic, Shell Oil Station, 200 Kink Street, Philadelphia, PA. From March 1, 1961 to February 1, 1964.

EDUCATION: West Side High School, Scranton, PA. Graduated June 1960. Auto Mechanics Course.

Ace Mechanics School, Philadelphia, PA. Graduated February, 1961.

REFERENCES: Mr. John H. Harvey, Manager, Shell Oil Station, 200 Kink Street, Philadelphia, PA.

Dr. A.M. Prayer, First Methodist Church, 152 Pinehurst Blvd., Philadelphia, PA.

Mr. George Cladwell, Owner, Pinehurst Buick Co. 144 Pinehurst Blvd., Philadelphia, PA.

RESUMES

Sample #2

Michael Santiago

EMPLOYMENT:

1989-Present	Apprentice Plumber, Asociacion Trabajadores Unidos, Norris Square Civic Association, 124 West Diamond Street, Philadelphia, PA 19124.
1988 (April to August)	Assistant Plumber, Costa and Sons, Commercial Contractors, 1758 North Broad Street, Philadelphia, PA 19118

EDUCATION:

1969-1972	St. Rosa High School, Puerto Rico.
1985	Courses in Plumbing, Philadelphia TRADES Academy

REFERENCES:

Mr. Joseph Costa, Owner, Costa and Sons Commercial Contractors, 1758 North Broad St., Philadelphia, PA 19118

Ms. Patricia DeCarlo, Director, Norris Square Civic Association, 124 West Diamond Street, Philadelphia, PA 19122

Mr. Carlos Matos, President NSEDA

PERSONAL DATA SHEET

Name: _____
First Middle Last

Address: _____ number of years at this address: _____

_____

Phone Number: ( ) _____
area code

Date of Birth _____/_____/_____ Present Age: _____

Place of Birth: _____
City State

Social Security Number: _____ _____ _____

PARENTS:

Mother: Name: _____
Maiden Name: _____
Place of Birth: _____
Address: _____
Occupation: _____
Employer: _____
Work Address: _____
Work Phone: _____

Father: Name: _____
Maiden Name: _____
Place of Birth: _____
Address: _____
Occupation: _____
Employer: _____
Work Address: _____
Work Phone: _____

PERSONAL DATA SHEET (cont'd)

Person to notify in an emergency:

Name: _____ Phone No. (home) _____

Address: _____ Phone No. (work) _____

_____

Personal Physician: Phone No. (home) _____

Name: _____ Phone No. (work) _____

Address: _____ Hospital: _____

_____

Bank: _____ Account Number: _____

EDUCATION:

Name of School

Elementary: Address: _____ Year Graduated: ____

Junior High:

Senior High:

College/University:

Work Experience:

Job	Employer	Address	Dates	Salary
most recent:				
least recent:				

PERSONAL DATA SHEET (cont'd)

REFERENCES:

NAME	ADDRESS	PHONE	OCCUPATION
1.			
2.			
3.			

MILITARY HISTORY:

Branch of service _____ Rank: _____

Dates Served: _____ Serial No.: _____

Type of Discharge: _____

Work done in service: _____

MEDICAL HISTORY:

Circle any of the diseases below that you have had:

Epilepsy	Heart Trouble	Tuberculosis
Rheumatism	Asthma	Back Trouble
Arthritis	Hernia	Diabetes

Date of last physical exam: _____

Do you have any disabilities? Explain: _____

Have you ever had an injury on the job? Explain: _____

_____

Hobbies: _____

Sports: _____

Clubs/Groups: _____

Church Affiliation: _____

Awards/Honors: _____

The Job Interview

For a job interview remember to:

1. Have your resume and data sheet ready.

2. Bring any certification papers you have from training courses.

3. Be dressed neatly and conservatively with a tie and jacket, or suit (depending on where you are interviewing).

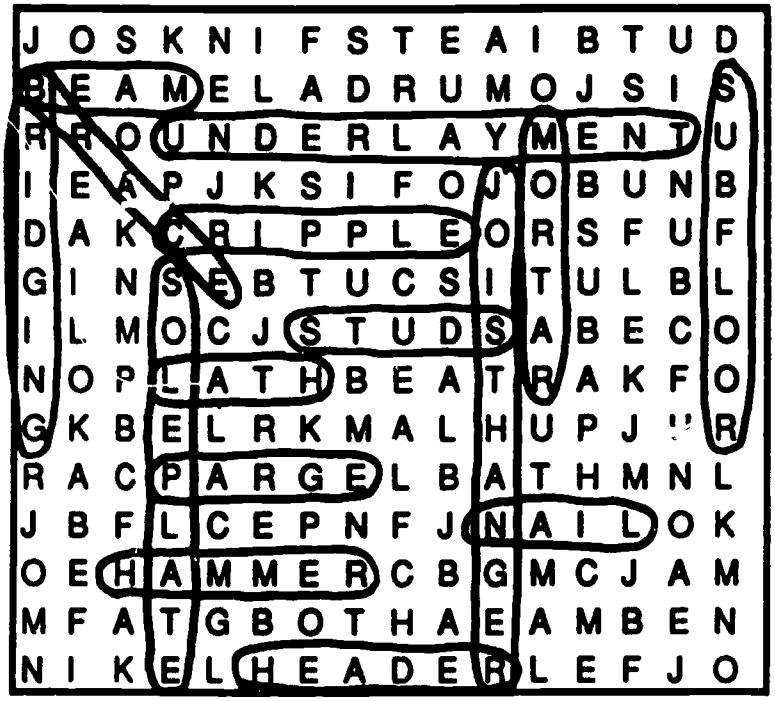
4. Be early for your appointment.

5. Be able to explain why you are interested in the job and what you know about your potential employer.

6. Ask questions about the job. Don't hesitate to find out as much as you can.

Answer Key

Carpentry Word Search



J	O	S	K	N	I	F	S	T	E	A	I	B	T	U	D
B	E	A	M	E	L	A	D	R	U	M	O	J	S	I	S
R	R	O	U	N	D	E	R	L	A	Y	M	E	N	T	U
I	E	A	P	J	K	S	I	F	O	J	O	B	U	N	B
D	A	K	C	R	I	P	P	L	E	O	R	S	F	U	F
G	I	N	S	E	B	T	U	C	S	I	T	U	L	B	L
I	L	M	O	C	J	S	T	U	D	S	A	B	E	C	O
N	O	P	L	A	T	H	B	E	A	T	R	A	K	F	O
G	K	B	E	L	R	K	M	A	L	H	U	P	J	I	R
R	A	C	P	A	R	G	E	L	B	A	T	H	M	N	L
J	B	F	L	C	E	P	N	F	J	N	A	I	L	O	K
O	E	H	A	M	M	E	R	C	B	G	M	C	J	A	M
M	F	A	T	G	B	O	T	H	A	E	A	M	B	E	N
N	I	K	E	L	H	E	A	D	E	R	L	E	F	J	O

Find the following words:

HAMMER	BRACE	UNDERLAYMENT
CRIPPLE	PARGE	SUBFLOOR
BEAM	LATH	JOIST HANGER
STUDS	HEADER	BRIDGING
SOLE PLATE		
NAIL MORTAR		

Cloze Reading: Wall Assembly

Directions: Fill in the blanks with the correct word. Use the words in the list below.

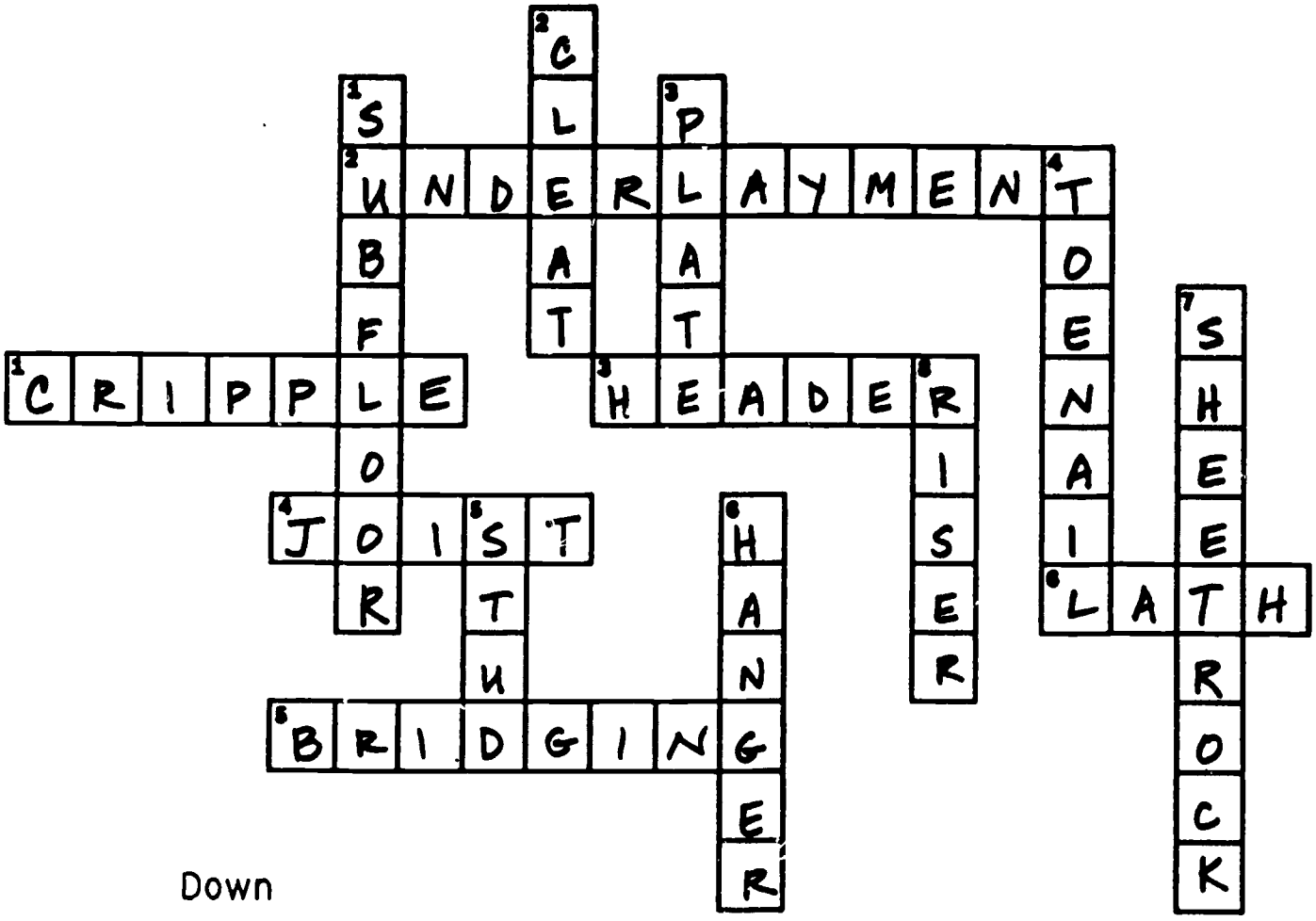
floor be studs bottom nails square install required wood the

Cut the various stud lengths as indicated by the blueprints. You can save considerable time by using precut studs. Since they are factory trimmed each piece will be identical in length. Place the sole and top plates on edge, far enough apart so that the studs can be install. Be sure the floor is swept clean for this operation. Nail the top and bottom plates to the regular studs. Use 16d nails. Before nailing the door studs, lay them flat on the floor and add the trimmers. Use 10d nails and be sure the bottoms are aligned.

After the regular and RO studs are in place, install the headers, rough sills and cripples. It will be necessary to toenail the cripple studs which butt the headers. Use 8d nails for toenailing. Box nails are thinner than common nails and have less tendency to split the wood.

When all members have been install, check the section for squareness. Measure the diagonals which should be equal. If the wall in not pre-sheathed, install temporary diagonal bracing to keep the assembly square while erecting. If the sheathing is to be applied, the bracing is not required. Tack the assembly to the floor, however while sheathing.

Carpentry Crossword Puzzle



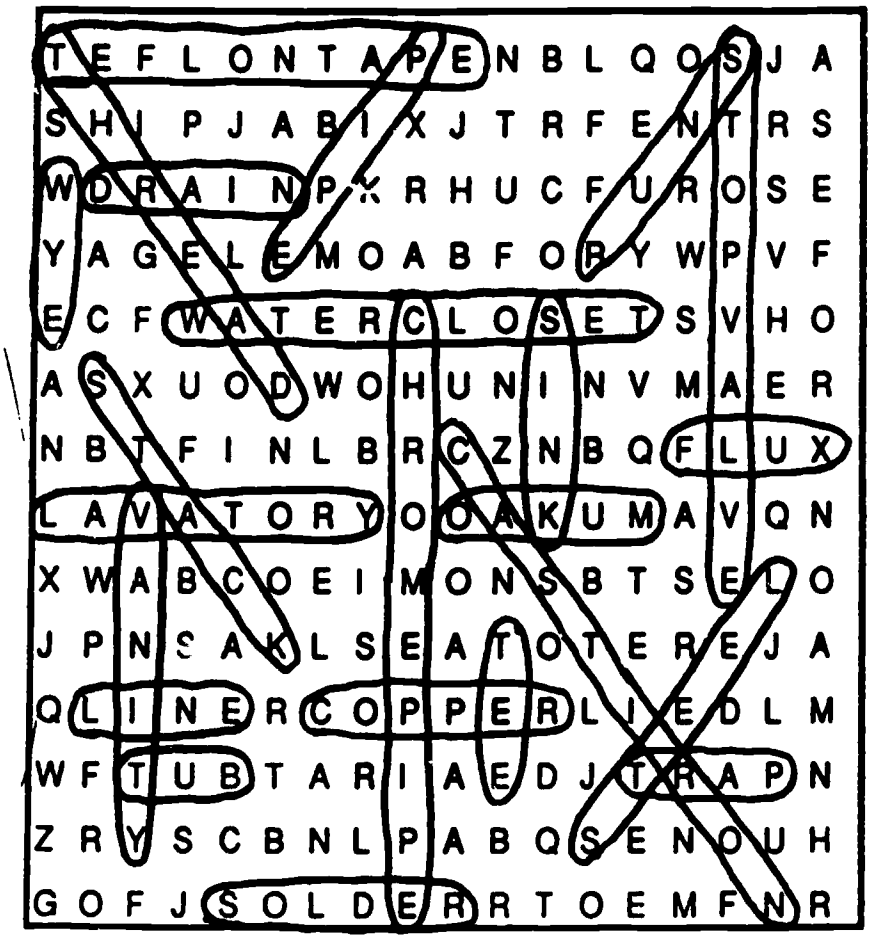
Down

1. Rough flooring laid directly over joists.
2. Scab.
3. Horizontal framing member nailed to top of wall studs.
4. Driving of a nail at an angle to join two pieces.
5. U ight member of wall frame, 2X4.
6. Joist _____, metal bracket used to support joists.
7. Drywall.
8. Vertical member between the treads of stairs.

Across

1. Shorten studs cut to fit above and below wall frame.
2. Material on which a finish floor is placed.
3. Horizontal load bearing support over opening like door or window.
4. Horizontal lumber laid on edge to support floor and ceiling loads.
5. Wood or metal placed between floor joist to stiffen.
6. Wire mesh used to support and adhere to bricks when parging.

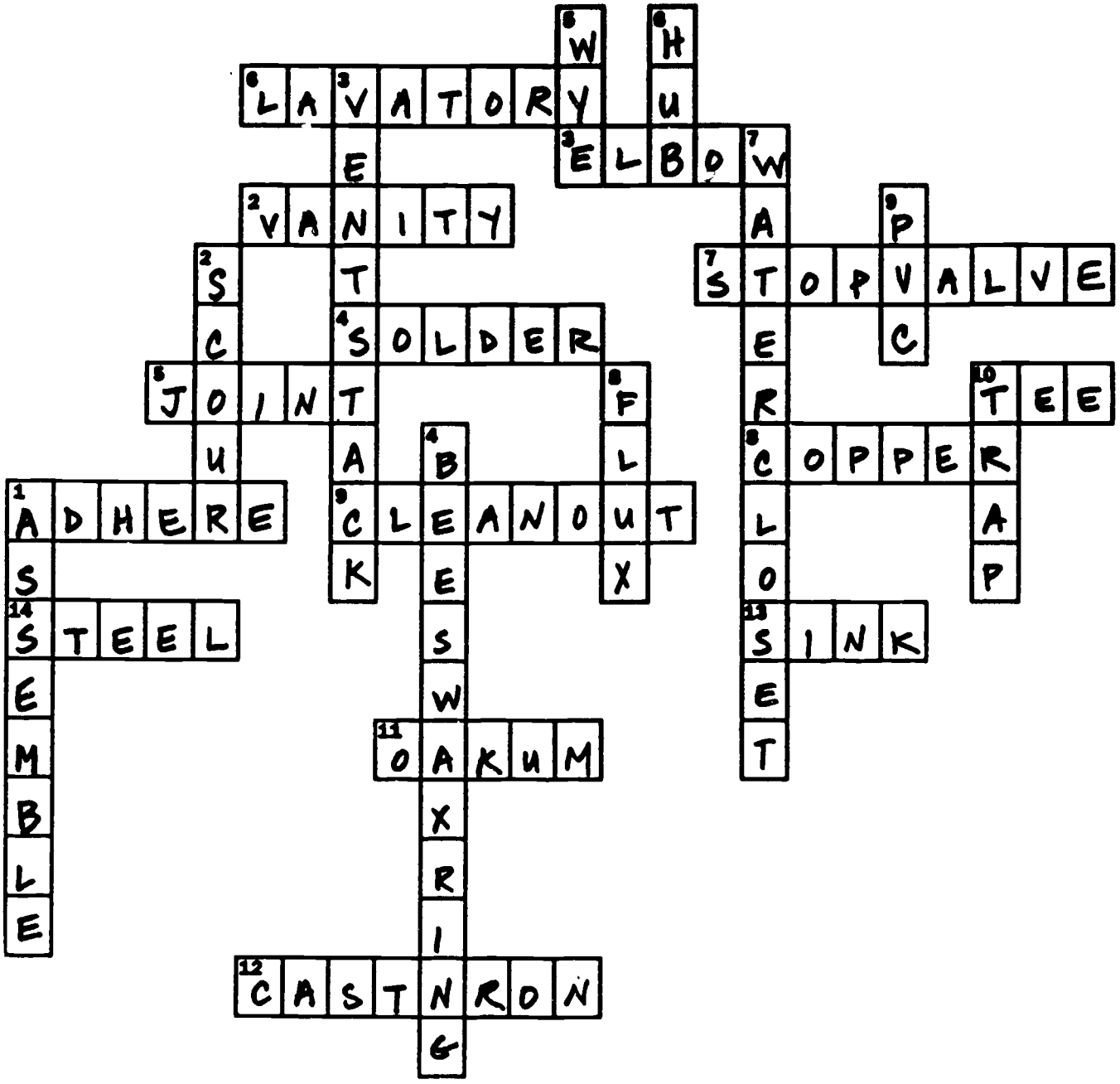
Plumbing Word Search



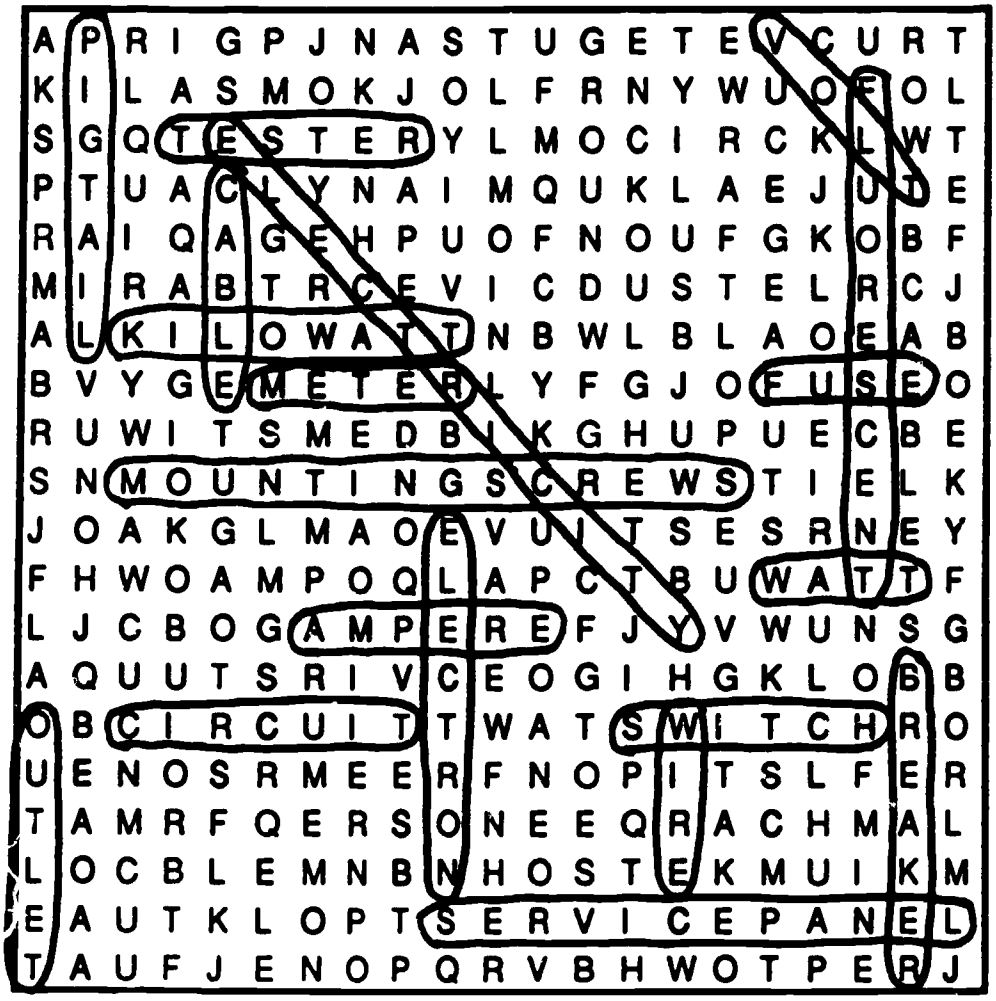
Find the following words:

CAST IRON	CHROME PIPE	COPPER
DRAIN	FLUX	LAVATORY
LINE	OAKUM	PIPE
RUNS	SOLDER	STACK
STEEL	STOP VALVE	TEE
TEFLON TAPE	THREAD	TRAP
TUB	VANITY	WATER CLOSET
WYE		

Plumbing Crossword Puzzle



Electrical Word Search



Find the following words:

TESTER	WIRE	FLOURESCENT
ELECTRON	SERVICE PANEL	CABLE
AMPERE	KILOWATT	FUSE
ELECTRICITY	OUTLET	VOLT
CIRCUIT	WATT	BREAKER
SWITCH	METER	MOUNTING SCREWS
PIG TAIL		

Electrical Vocabulary Drill
Fill in the blank with the correct vocabulary word

hot wires	service panel	volt
ampere	kilowatt-hour	conductor
device	grounding wire	Romex
watt	hot wires	

1. Watt is the unit of power. The rate at which a device uses energy.

2. Romex A manufacturer of non-metallic sheathed electrical cable, this name has become a generic term for this type of cable.

3. Service Panel The main panel in a house where incoming electricity is divided into branch circuits. These circuits provide electricity to the house.

4. Volt is the unit that measures the potential difference in electrical force, or "pressure", between two points on a circuit.

5. Kilowatt-hour is the unit of energy. It measures the total amount of electricity that is consumed.

6. Conductor The wire through which the electricity flows.

7. Grounding Wire A conductor, usually copper, that grounds a metal componet of a circuit. It does not carry current unless the metal componet becomes live through some malfunction. Then it returns the current to the source, thus eliminating a shock.

8. ampere is the unit used to measure the amount of current or the number of electrons, that flow past a given point on a circuit. This amount is measured by the second.

9. device A part of the wiring system that carries electricity but doesn't use it. Switches and receptacles are examples.

10. hot wire Any colored wire, except white and green, through which current flows.

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