



THE VIRGINIA ADULT LEARNING RESOURCE CENTER

V i r g i n i a C o m m o n w e a l t h U n i v e r s i t y

Plumbing Lesson Two: A Plumber's Tools Facilitator Guide

Building Basics was paid for under an EL Civics grant from the U. S. Department of Education administered by the Virginia Department of Education. It was paid for under the Adult Education and Family Literacy Act of 1998; however, the opinions expressed herein do not necessarily represent the position or policy of the U. S. Department of Education, and no official endorsement by the U. S. Department of Education should be inferred. This document was designed and created by the Virginia Adult Learning Resource Center at Virginia Commonwealth University, 817 West Franklin Street, Suite 221, P.O. Box 842037, Richmond, VA 23284-2020. It may be reproduced for nonprofit, educational purposes only.

Plumbing A Plumber's Tools



Building Plan / Blue Prints / Specs (Getting Ready to Teach)

Lifeskill Objective: Learners will be able to identify and describe the functions of common plumbing tools.

EFF Skills: Speak So Others Can Understand, Work Together, Cooperate With Others

SCANS Skills: Interpersonal (participate as member of a team; teach others)

Lesson Length: 2-3 hours



Tools

Realia: Pipe Wrench--several sizes, if possible
Adjustable wrench
Rib-joint and Slip-joint pliers
Locking pliers
Screwdrivers--at least one standard flat-bladed and a Phillips
Plunger
Auger
Hacksaw

Activity #1: A Plumber's Tools--cut up into small tool pictures

Activity #2: A Plumber's Tools Handout
How Many Tools Do You Need? Handout

Activity #3: Miguel's Toolbox Handout

Activity #4: Volunteers Needed Overhead
A Plumber's Tools Handout
Poster-sized Blank Paper
Glue sticks, Scissors, and Markers
Masking Tape or Other Material--for hanging posters

Activity #5: Plumbing Puzzle Handout A
Plumbing Puzzle Handout B
Plumbing Puzzle Handout C

Finishing

Work:

Essential Plumbing Tools Checklist Handout A

Essential Plumbing Tools Checklist Handout B

Essential Plumbing Tools Checklist Handout C

Optional additional resource:

A Plumber's Glossary: http://www.lowes.com/lowes/lkn?action=howTo&p=Repair/bathrepairs_glossary

Target Vocabulary

Nouns:

adjustable wrench	auger	flat-bladed screwdriver	hack saw
Phillips screwdriver	pipe wrench	plunger	rib-joint pliers
slip-joint pliers	snake		

Verbs:

cut	drive	grab	grip	loosen
measure	remove	replace	tighten	

Laying the Foundation Warm-Up / Presentation



Actions	Materials
<p>Activity #1: <i>Tool Groups: Getting into Groups</i></p> <p>1. Give each learner a small tool picture as they enter the classroom. Tell learners to find their other group members by looking for other tools that look like theirs.</p> <p>They are looking for the other tools in their <i>tool family</i>. As the learners are locating their group members, make a chart with two columns, entitled <i>Tool Families</i>, on the board.</p>	<p>A Plumber's Tools— Cut Up Into Small Tool Pictures</p>
<p>2. Label the left column <i>Tools</i> and the right column <i>Uses</i>. When the learners find their group members, ask them to sit down together. Ask each group to tell you the name of their <i>tool family</i>. Write the tool group names in the chart. Then ask the group to tell you what we use these tools for. Write the uses in the other column. Use different colors, if possible, to highlight the different information in each column.</p>	

Tool Groups

Tool Name What are they called?	Use What do they do?
hammers	drive a nail into another surface
saws	cut pipes
wrenches	grab or grip a pipe
tape measures	measure
screwdrivers	tighten or loosen screws
pliers	hold screws, bolts, nuts

Actions	Materials
<p>3. After completing the chart, model each tool name for the learners and ask them to repeat it after you. Then read each tool use, e.g., <i>to drive a nail</i>. And ask learners to demonstrate the action described. Then ask learners to repeat the phrase after you.</p> <p>Tell the learners that today they will learn to identify the names and uses of <i>common plumbing tools</i>.</p>	
<p>Activity # 2: How Many Tools?</p> <p>1. Give each learner the A Plumber's Tools and How Many Tools Do You Need? Handouts. Read the list of tools on the first page of A Plumber's Tools to the group. Have learners repeat each tool name after you.</p> <p>Pointing to the chart on the board, ask learners to guess what we use each tool for. Answers can be simple phrases similar to those used in the chart; e.g., to grip. Provide answers for any tool uses that learners are unable to guess.</p>	<p>A Plumber's Tools Handout</p> <p>How Many Tools Do You Need? Handout</p>
<p>2. Have a volunteer read the rules in the How Many Tools Do You Need? Handout for the plural forms of these words. After learners hear and read each rule, elicit examples from the A Plumber's Tools Handout that fit that plural ending. Write learner responses on the board so that the group can see additional examples of the written forms.</p>	<p>A Plumber's Tools Handout</p> <p>How Many Tools Do You Need? Handout</p>
<p>3. Ask volunteers to read each completed sentence. Answer questions or have other learners explain answers, if needed.</p>	<p>How Many Tools Do You Need? Handout</p>

Building on the Foundation Practicing the New Language



Actions	Materials
<p>Activity # 3: <i>How Many Tools Does Miguel Need?</i></p> <p>Give learners the Miguel's Toolbox Handout. Have a strong reader read the first three sentences to the group. Check to be sure that all learners understand the situation.</p> <p>Ask learners to listen as you model the conversation with another learner with strong speaking skills. The first time you read it, learners should just listen and read along silently. Read the conversation again. Learners should write the words they hear on the lines. Read the conversation again, as needed.</p> <p>Have each learner work with a partner from their tool families to check their answers. Circulate and answer questions, as needed.</p> <p>If time permits, learners can practice this conversation out loud with a partner or make up their own conversations, using the other tools on the A Plumber's Tools Handout.</p>	<p>Miguel's Toolbox Handout</p>

Actions	Materials
<p>Activity # 4: <i>Volunteering to Help</i></p> <p>Determine groups of four based on English skill level. Ask the learners in those groups to sit down together.</p> <p>Explain to the learners that in this activity, they (in their small groups) will be packing tools in a van they are taking to another area in their state to assist people in a small town a few hours away to rebuild after a terrible storm destroyed much of their town. As you are telling them this story, you can show slides or photos of scenes from the Gulf Coast or other U.S. areas devastated by weather events--available everywhere on the Web.</p> <p>Tell the learners that they will be working as "volunteers" in this area for 10 days. Ask a learner to explain the word <i>volunteer</i>. To clarify the meaning, elicit examples of the kinds of activities they can volunteer to do in their area.</p> <p>Katrina or the Asian tsunami will most likely come up in the discussion. If not, tell learners that one thing groups often do is to go to another place and help communities clean up and build again after a bad storm.</p> <p>Tell the learners that they only need to bring work clothes and their own tools; food, a place to sleep, and most large plumbing supplies will be available there. The group needs to decide what tools to bring with them so that they will all be able to do the work.</p> <p>Place the Volunteers Needed Overhead on the OHP. These are the jobs that the teams will be doing to rebuild parts of the town. Assign the beginner group to Team #3 and have other groups select one of the other three team assignments. Leave this transparency on the OHP so that groups can refer to it throughout the activity.</p> <p>Give each group a poster-size sheet of paper, a pair of scissors, a glue stick, and a marker. From each group, appoint a strong speaker as the driver and the others as plumber's helpers. The driver holds the paper in front of him or her on the table. Tell the drivers to draw a large van on their papers to cover most of the sheet. Draw an example on the board.</p> <p>Holding up the A Plumber's Tools Handout, tell the groups to refer to the tools on this list when they discuss which tools (at least 10) are the most important for them to take with them to their volunteer work. Ask the groups to cut out and glue the pictures of</p>	<p>Volunteers Needed— Overhead</p> <p>Poster-sized Blank Paper</p> <p>Glue Sticks</p> <p>Scissors</p> <p>Markers</p> <p>A Plumber's Tools Handout</p>

Actions	Materials
<p>the tools they selected inside the truck outline.</p> <p>As the groups are working on "equipping their vans," write the following sample chart on the board:</p>	<p>Volunteers Needed—Overhead</p> <p>Poster-sized Blank Paper</p> <p>Glue Sticks</p> <p>Scissors</p> <p>Markers</p> <p>A Plumber's Tools Handout</p>

	Number	Tool Name	Job
We are taking	two	hack saws	to install new pipes.
We are taking	two sets of	wrenches	to repair broken pipes.

<p>Ask the "drivers" from each group to hang their van pictures on the walls around the room, using masking tape or other sticky material provided, and stand next to their picture. Tell the class that each driver is going to explain which tools their group chose to put in their van and why. Read the sample sentences you wrote on the board. Point out that they need three pieces of information in each sentence. Drivers can use the sentence structure you wrote on the board or make up their own.</p> <p>Model what drivers will do. Following the example in the chart, point to a tool on one group's chart and model one sentence for the group.</p> <p>Continue to have all the drivers of the groups, in turn, explain the tools in their pictures. Leave pictures hanging in place for several weeks, if possible.</p>	
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Actions	Materials
<p>Activity #5: <i>Plumbing Puzzle</i> (Review of Vocabulary from Lessons 1 & 2)</p> <p>Give each learner a version of the Plumbing Puzzle Handout (A--beginning, B--mid-level and C--higher level) depending on his or her English skills.</p> <p>Explain that students can work the puzzle alone or with a partner who has a handout with the same letter at the top on this practice to review the tool names and spellings.</p> <p>Ask learners to show with their hands what <i>across</i> and <i>down</i> mean and then point to the spaces for #1 Across on their Handouts.</p> <p>Assist beginners or those unfamiliar with crossword puzzle format in starting their puzzles.</p>	<p><i>Plumbing Puzzle Handout A</i></p> <p><i>Plumbing Puzzle Handout B</i></p> <p><i>Plumbing Puzzle Handout C</i></p>

Finishing Work Extension or Out-of-Class Practice



Actions	Materials
<ol style="list-style-type: none">1. Go to a building supply store (e.g. Home Depot, Lowe's) near you. Go to the tool section of the store and look at the different kinds of tools in each tool group.2. Go to the Plumbing supply aisle of a building supply store. Make a list of the types of products available.3. Essential Plumbing Tools Checklist (extra practice): A new homeowner moved into the old house next door to yours. He has no tools but wants to learn to fix things in his house. He finds out that you are working as a plumber/plumbing helper and asks for your advice. Complete the checklist for your neighbor, filling in the missing words in the blanks.4. Visit these websites to learn more about the variety of plumbing tools on the market:<ul style="list-style-type: none">➤ http://www.acehardware.com➤ http://www.coastaltool.com➤ http://www.homedepot.com➤ http://www.lowes.com➤ http://www.hometips.com/home_probsolver/home_problemsolver.html	<p><i>Essential Plumbing Tools Checklist Handout A</i></p> <p><i>Essential Plumbing Tools Checklist Handout B</i></p> <p><i>Essential Plumbing Tools Checklist Handout C</i></p>



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Plumbing
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A Plumber's Tools: Tool Families

PLIERS				
WRENCHES				
PLUNGERS				
SAWS				
HAMMERS				

A Plumber's Tools: Tool Families

PIPE CUTTERS				
TAPE MEASURES		 <p>SERIES 61</p>	 <p>SERIES 46</p>	 <p>SERIES 19</p>

VOLUNTEERS NEEDED!

WE NEED YOU!



Team # 1 Rebuild Community Center Plumbing

- **lay pipes in ground outside the building.**
- **hang pipes inside for clean water and waste.**

Team # 2 Repair Plumbing in Old Homes

- **unclog drain pipes inside houses**
- **install new appliances in flooded homes**

Team # 3 Install Fixtures in New Apartments

- **toilets**
- **hot water heaters**
- **sinks**
- **washers**
- **bathtubs**
- **refrigerators**

Team # 4 Repair Waste and Water Pipes In Old Neighborhoods

- **open blocked sewer pipes outside homes**
- **fix broken water pipes in ground**

Activity #2

How Many Tools Do You Need?



NUMBER	NUMBER WORD OR EXPRESSION	NOUN	HOW IT WORKS
1	a	hammer	We use “a” in front of a singular (one) noun.
1	an	auger electric drill	We use “an” in front of nouns that begin with a vowel sound .
1	a pair of	work gloves pliers safety glasses	This is one object with two parts. We add “s” or “es” at the end of the word.
2 or 3	a few some	plungers	We add “s” or “es” to plural nouns.
3 or more	several a set of	pipe cutters drill bits wrenches	We add “s” or “es” to plural nouns.

Let's Practice

Write the correct form of each word. First, look at the example.

Example: Give me **several** wrenches.

wrench

1. Please hand me **a set of** wrenches.

screwdriver

2. I need **a few** bolts.

bolt

3. We need **a 6ft** snake to clear this drain.

snake

4. I have **a pair of** glasses if you need them.

glasses

5. Can you give me **some** saws, please?

saw

Activity #3

Miguel's Toolbox



Miguel is going to fix a problem with the bathroom sink at his friend's house. Before he leaves, he needs to pack his toolbox. Miguel tells his daughter, Elena, which tools he needs. Elena is putting the tools in his toolbox.

Read Miguel and Elena's conversation and write the correct words on the lines after each picture.

Elena: What tools do you need, dad?

Miguel: I need  a plunger,  a wrench and  a pair of safety glasses.

Elena: What else do you need?

Miguel: I need  a wrench and  a pair of pliers.

Elena: Which wrench do you want?

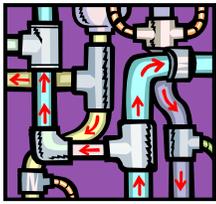
Miguel: Put in an adjustable wrench and  a locking wrench.

You can also throw in  a set of socket wrenches.

Elena: Anything else?

Miguel: Let's see. I will need  a flashlight,  a tape measure,  an electric drill and  a set of drill bits.

Elena: Okay, Dad. I hope that's all. Your toolbox is full.



Activity #3: Plumbing Puzzle

Handout A



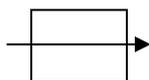
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⁴ t				e				⁶ s											
o		⁵ s	n	a	k	e		⁷ i	⁸ n	⁹ s	t	a	l	l			¹⁰ p		
i		a		t				n	h	u							l		
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Activity #3: Plumbing Puzzle

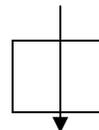
Handout A



Words that you write **ACROSS**



DOWN



1. You use this appliance to wash your clothes.
3. The water in your sink goes down the _____.
5. A long tool that goes down a pipe to clean it.
7. A word that means "to put in a new appliance."
11. _____ water pressure means very little water.
13. Plumbers use this tool to hold or turn pipes.
15. You use this tool to turn screws.

19. You need a _____ measure to find out the length of a pipe.



20. _____ pliers hold screws and bolts tightly.

21. A _____ toilet has moving water all the time.

23. A bath _____ is very heavy.

2. A hot water _____ heats the water in a building.
4. Two commodes is the same as two _____.
5. You cut pipes with a hack _____.

6. a



8. a



9. Another word for a plumber's snake is an _____.

10. This man is using a



- 12.



14. You can _____ pipe with a pipe cutter.

16. When water does not go down a drain, the drain has a _____.

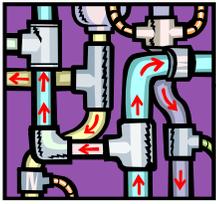


17. This pipe has a

18. a



22. A plumber can _____ a pipe with a crack in it.



Activity #3: Plumbing Puzzle

Handout B



										3							
	1									p							
	d									l							
	r				2					i					6		
	i				t										c		
									5								
					i				p	r	e	s	s	u	r	e	
	4																
	p	l	u	n	g	e	r		i	r					a		
					h				p	s					c		
	7							10					8				
	a	d	j	u	s	t	a	b	l	e		s	n	a	k	e	
					e			r		c							
	9									11					12		
	l	o	o	s	e	n		e		u	n	c	l	o	g		
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Activity #3: Plumbing Puzzle

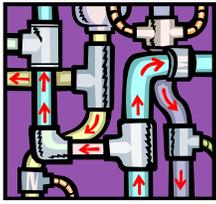
Handout B



DOWN

ACROSS

1. A faucet will _____ when it is not working correctly.	4. We use this to force a blocked drain or pipe to open.
2. If a pipe is loose, you need to _____ it.	5. If your shower sprays just a little water, the problem could be low water _____.
3. You can use _____ to grip a bolt, nut, or screw.	7. The type of wrench that fits different sizes of nuts, bolts or fittings with flat sides.
5. This pipe doesn't fit. It's too long. Do you have a _____ _____?	8. A plumber puts a _____ down a pipe to clean out a block.
6. Another word for a <i>break</i> in a pipe is a _____.	9. To remove a nut or bolt, you _____ it.
9. When water runs down or sprays from a pipe, the pipe has a _____.	11. Another word for <i>unblock</i> is _____.
10. If your pipes freeze when it is very cold, they can _____.	13. To cut pipes, you can use a _____ saw.
12. Another word for <i>grab</i> or <i>hold</i> is _____.	14. To learn the length of a pipe, you use a tape _____.



Activity #3: Plumbing Puzzle

Handout C



			l	o	w								d	r	a	i	n	
p	i	p	e					t					i					
			a	d	j	u	s	t	a	b	l	e	s					
	b		k						p				p					
	l				f	a	u	c	e	t			o					
	o							m					s		h			
s	c	r	e	w	d	r	i	v	e	r			r	e	p	a	i	r
	k								a				r		c			
			g	r	i	p			s							k		
						l			a	u	g	e	r			s		
j	o	i	n	t		u			r			u			a			
					n				e			n			w			
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			v									g						
			e															

ACROSS

- When very little water comes out of a fixture, the water pressure might be _____.
- The place where waste water goes is a _____.
- A _____ wrench is used to grip or turn pipes.
- The type of wrench that fits many sizes of nuts and bolts with flat sides.
- The fixture on a sink where the water flows from.
- This tool tightens and loosens screws.
- Another word for fix is _____.
- Another word that means "to hold something tightly."
- Another word for snake is _____.
- The place where two pipes meet is the _____.
- Plumbers put this down pipes to remove clean out clogs.
- To put the parts of something together is to _____.

DOWN

- Water coming out of a pipe or joint is a _____.
- This is an appliance that chops up food waste into very small pieces
- This is used to find out the length of a pipe.
- Another word for a clog is a _____.
- This is used to cut pipes.
- This is used over drains to force clogs through the pipes.
- This is a problem with a toilet. Water continues to flow from the tank to the bowl.
- You turn this to close and open a drain or pipe.

Essential Tools for Plumbing Checklist

Handout A

	TOOLS	USE
1.	a set of screwdrivers, Phillips and flat-bladed	to assemble fixtures, turn screws
2.	a <u>pipe</u> <u>wrench</u>	to grip or turn pipes or fittings
3.	a <u>hacksaw</u>	to cut pipes
4.	a <u>snake</u>	to clean out a blocked pipe
5.	<u>tape</u> <u>measure</u>	to find out the length of a pipe
6.	a <u>pipe</u> <u>cutter</u>	to cut pipes
7.	a <u>plunger</u>	to remove a clog from a drain
8.	an <u>adjustable</u> wrench	to tighten or loosen screws, bolts, and pipes with flat sides
9.	<u>locking</u> <u>pliers</u>	to grip or hold screws, bolts, or fittings
10.	rib- <u>joint</u> <u>pliers</u>	to grip or turn pipes, nuts and fittings

Essential Tools for Plumbing Checklist

Handout B

	TOOLS	USE
1.	a set of screwdrivers, Phillips and flat-bladed	to assemble fixtures, turn screws
2.	a pipe <u>wrench</u>	to grip or turn pipes or fittings
3.	a <u>hacksaw</u>	to cut pipes
4.	a snake	to clean out a blocked pipe
5.	<u>tape measure</u>	to find out the length of a pipe
6.	a pipe cutter	to <u>cut pipes</u>
7.	a plunger	to remove a clog from a <u>drain</u>
8.	an <u>adjustable</u> wrench	to tighten or loosen screws, bolts, and pipes with flat sides
9.	locking pliers	to grip or hold <u>screws</u> , <u>bolts</u> or fittings
10.	rib-joint <u>pliers</u>	to grip or turn pipes, nuts and fittings

Essential Tools for Plumbing Checklist

Handout C

	TOOLS	USE
1.	a set of screwdrivers Phillips and flat-bladed	to assemble fixtures, turn screws
2.	a <u>pipe wrench</u>	to grip or turn pipes or fittings
3.	a <u>hacksaw</u>	to <u>cut</u> pipes
4.	a snake	to clean out a <u>blocked</u> pipe
5.	a <u>tape measure</u>	to find out the length of a pipe
6.	a <u>pipe cutter</u>	to cut pipes
7.	a <u>plunger</u>	to remove a clog from a drain
8.	an <u>adjustable</u> wrench	to tighten or <u>loosen</u> nuts, bolts and fittings with flat sides
9.	<u>locking</u> <u>pliers</u>	to grip or hold screws, bolts or fittings
10.	<u>rib-joint</u> <u>pliers</u>	to <u>grip</u> or turn pipes, nuts or fittings