



Plumbing

Scouts BSA · Trades

Name

Started

Completed

Plumbing brings clean water into homes and carries waste away safely. You'll learn how these systems work, use real tools, and do simple repairs under supervision. These are handy skills that save time and money.

Requirements

Every official requirement, in plain language. Check the official wording when you sign off (scouting.org/merit-badges/plumbing/). Tips and examples are ideas, not extra requirements.

1 Health and safety

Tips for this section: Talk about why plumbing rules protect people's health, and learn the safety steps before working on any pipes.

Example for this section: Explain how a P-trap holds water to block sewer gas, why codes require backflow prevention so dirty water can't get into drinking lines, and the safety steps you take before working, like shutting off water and power to a water heater.

- ☐ **1a** Describe how a plumbing system that works properly keeps your family healthy and safe

- ☐ **1b** List five important local health rules about plumbing and tell how each protects health and safety

- ☐ **1c** Describe the safety steps to take when doing plumbing repairs at home

2 Supply and drainage systems

Tips for this section: Trace the pipes in your basement or under the sink, then draw where water comes in and goes out.

Example for this section: Draw your home's system in two colors: blue and red for the cold and hot supply lines from the meter and water heater, and brown for drains, traps, and the vent pipe through the roof. Label the shutoff valves.

- ☐ **2a** Draw a home's hot- and cold-water supply system and explain how it works, and tell how you'd keep it from freezing

- ☐ **2b** Draw a house's plumbing drainage system and explain it. Show and explain what drains and vents do

- ☐ **3** Show how to use five important plumbing tools

Tip: Ask a parent or plumber to show you how to use each tool before you try it.

Example: Show five tools with a real task for each: an adjustable wrench on a supply nut, a pipe wrench on threaded pipe, a plunger on a sink, a tubing cutter on copper, and a hacksaw or PVC cutter on plastic pipe.

- ☐ **4** Identify and explain these terms: water meter, drainpipe, trap, union, plug, coupling, nipple, tee, elbow, flux, solder, plunger (rubber force cup), retaining nut, and washer

Tip: Make flash cards of common terms and fittings, and look for them at a hardware store.

- ☐ **5** Name the pipe types most often used in plumbing systems and explain why each is used

Tip: Visit a hardware store to see and compare different pipe types.

Example: Bring short samples or photos of copper, PEX, PVC, ABS, and galvanized steel. For each, say where you'd find it, like PEX for supply lines in newer homes or PVC and ABS for drains.

6 Hands-on plumbing: Choose 4 of 7

Tips for this section: Do these tasks with a skilled adult supervising, like replacing a faucet or cleaning out a sink trap.

Example for this section: Four tasks with an adult might be: name the pipes and fittings in a hardware store's plumbing aisle, clean out a sink P-trap, wrap thread tape on a fitting, and cut PVC pipe and solvent-weld a coupling, a tee, and an elbow.

- ☐ **6a** With a knowledgeable adult supervising, go to the plumbing section at a home center or hardware store and identify 6a1 through 6a6

- ☐ **6a1** PVC pipe and fittings

- ☐ **6a2** CPVC pipe and fittings

- ☐ **6a3** PEX pipe and fittings

- ☐ **6a4** Copper pipe and fittings

- ☐ **6a5** Steel pipe and fittings

- ☐ **6a6** Specialty plumbing tools

- ☐ **6b** With a knowledgeable adult supervising, cut and deburr PVC or CPVC pipe and solvent weld three or more joints, including a coupling, a tee, and an elbow

- ☐ **6c** With a knowledgeable adult supervising, cut PEX pipe and make one or more joints using a crimp fitting (with its special tools) or a quick-connect fitting

- ☐ **6d** With a knowledgeable adult supervising, use a gas torch to solder a copper joint

- ☐ **6e** With a knowledgeable adult supervising, replace a kitchen or bathroom faucet

- ☐ **6f** With a knowledgeable adult supervising, take out a sink or lavatory drain trap, clean or replace it, and put it back in

- ☐ **6g** With a knowledgeable adult supervising, correctly wrap pipe thread tape on a pipe or plumbing fitting

- ☐ **7** Name three careers that use plumbing skills. Pick one and research its training, education, certification, experience, and costs to get started, plus job outlook, starting pay, and advancement. Discuss what you learned and your interest with your counselor

Tip: Ask a plumber how they learned the trade and what an apprenticeship is like.