STRETCHLEARN · WORKBOOK

Plumbing Repairs DIY — Workbook

This workbook turns the Plumbing Repairs DIY course into a hands-on home system. You will map every shut-off in your house, build a repair toolkit, diagnose and rebuild faucets, swap angle stops, clear drains, reset a toilet, and practice copper, push-fit, and PEX joints before they matter. Work one section per module, then use the templates to log each repair, track parts, and price jobs so you know exactly what you saved by doing it yourself.

Know Your System Before You Touch a Wrench

Map your home's supply and drain systems, find every shut-off, and stage the tools and safety habits each repair needs.

Worksheet: Whole-House Shut-Off Map

Walk your home with a flashlight and fill this in by actually finding and gently operating each valve. Keep the finished sheet where any family member can reach it in an emergency.

Main shut-off location and valve type (ball or gate)

Direction that closes the main

Water meter / curb stop location

Kitchen sink hot and cold angle stops

Each bathroom sink hot and cold angle stops

Each toilet shut-off location

Water heater shut-off location

Washing machine and dishwasher valves

Outdoor hose bib valves

Exercise: Trace One Fixture End to End

Pick one sink and trace its plumbing on paper, supply and drain, before you ever repair it. This builds the mental map every later repair relies on.

• Which supply branch feeds the hot side and which feeds the cold, and where do they originate?

• Where are this fixture's shut-offs, and does each one fully close when you test it?

• Where is the P-trap, and where does the drain branch run from there?

• If this fixture gurgled or smelled, would you suspect the vent, the trap, or the supply, and why?

Checklist: DIY Plumbing Toolkit Readiness

[ ] Adjustable wrench and tongue-and-groove pliers on hand
[ ] Basin wrench for faucet mounting nuts
[ ] Tubing cutter for copper and PEX
[ ] Cup plunger plus a flange plunger and closet auger
[ ] PTFE thread-seal tape and pipe-joint compound
[ ] Braided stainless supply lines in common sizes as spares
[ ] Towels, shallow bucket, headlamp, and nitrile gloves staged together

Checklist: Pre-Repair Safety Routine

[ ] Identified and closed the smallest shut-off that isolates the work
[ ] Opened a high and a low faucet to drain the line and relieve pressure
[ ] Staged towels and a bucket before opening any connection
[ ] Confirmed no gas lines are near any planned torch work
[ ] Eye protection, fire-resistant cloth, and extinguisher ready if soldering
[ ] Noted whether pipes may be lead or lead-soldered and gloved up accordingly

Fixing Faucets and Replacing Valves

Diagnose a leak by where it drips, rebuild the faucet, swap a worn angle stop, and clear up weak flow and pressure.

Worksheet: Faucet Diagnosis Sheet

Fill this in for the faucet you are repairing before buying any parts, so you buy the right repair kit the first time.

Faucet location

Handle type (two-handle compression, single-handle cartridge, ceramic disc)

Where it leaks (spout when off, base when running, handle)

Faucet brand and model number if visible

Suspected worn part (washer/seat, cartridge, O-ring, ceramic disc)

Replacement part or kit number to buy

Manufacturer warranty checked (Y/N)

Exercise: Plan an Angle-Stop Replacement

Choose one stop valve to replace and plan the job before shutting any water off. Decide your connection method in advance.

• How does the existing stop attach to the stub-out: compression, soldered, or threaded?

• Will you fit a new compression stop or a push-fit quarter-turn stop, and why?

• Why must the main be shut before removing this particular valve?

• How will you check the copper stub for scoring, and what will you do if it is damaged?

Checklist: Faucet Rebuild Checklist

[ ] Both angle stops closed and faucet opened to confirm water off
[ ] Drain plugged with a rag against dropped screws
[ ] Old cartridge or stem removed, orientation noted
[ ] Replacement part matched to brand and model
[ ] O-rings lightly greased with silicone faucet grease
[ ] Reassembled snug without forcing, then flow tested at spout and base

Worksheet: Flow and Pressure Check

Use this to diagnose weak flow or noisy pipes by working from the cheapest, most accessible part inward.

Fixture with the complaint

Aerator cleaned and rated flow (gpm)

Angle stop confirmed fully open (Y/N)

Supply tube condition (braided / old chrome, cracked?)

House pressure gauge reading at a hose bib (psi)

Pressure in 40 to 80 psi range? (Y/N)

Likely cause and next step

Clearing Drains and Replacing a Toilet

Escalate drain-clearing methods safely, remove and reset a toilet on a fresh seal, and rebuild a running tank.

Exercise: Diagnose a Slow or Blocked Drain

Before reaching for any tool, work through these questions to choose the gentlest method that can clear the clog.

• Is one fixture slow or are several backing up, and what does that tell you about clog location?

• Have you cleaned the pop-up stopper and P-trap first on a slow bathroom sink?

• Which is the right next tool: cup plunger, hand auger, or closet auger, and why?

• Why are caustic chemical drain cleaners the wrong choice for a stubborn clog?

Checklist: Toilet Remove-and-Reset Checklist

[ ] Supply shut, tank and bowl drained and sponged out
[ ] Supply line and (if applicable) tank disconnected
[ ] Bolt caps removed and closet nuts off the flange bolts
[ ] Toilet rocked free, lifted straight up, set on cardboard

[ ] Old wax scraped from flange and horn, drain plugged with a rag
[ ] Flange inspected; repair ring or extender fitted if needed
[ ] New seal set, toilet lowered squarely, pressed down to seat
[ ] Closet nuts snugged alternately, never overtightened; tested through several flushes

Worksheet: Toilet Tank Tune-Up Sheet

Use this to stop a running or weak-flushing toilet by checking the flapper and fill valve.

Toilet location

Symptom (constant run, hiss, weak flush)

Dye test result (color in bowl after 15 min? Y/N)

Flapper condition (warped/stiff?)

Fill valve type and condition

Water level vs overflow tube (about 1 inch below top?)

Flapper chain slack correct? (Y/N)

Parts replaced and result

Exercise: Run the Dye Test

Confirm whether a quietly running toilet is leaking at the flapper before replacing anything.

• Did you add coloring to the tank and wait a full 15 minutes without flushing?

• Did color appear in the bowl, indicating a leaking flapper?

• If yes, is the flapper warped, stiff, or coated in mineral buildup?

• After replacing the flapper, did the dye test come back clean?

Joining Pipe: Copper, Push-Fit, and PEX

Choose the right connection method for the job, then make sound soldered copper, push-fit, and crimped PEX joints.

Worksheet: Connection-Method Decision Sheet

Fill this in for an actual pipe repair to choose between soldered copper, push-fit, and PEX deliberately rather than by habit.

Repair location and accessibility (open / behind wall)

Pipe materials being joined (copper / PEX / galvanized / CPVC)

Is the spot damp or near anything flammable? (Y/N)

Tools you own (torch, crimp tool, expander, none)

Number of joints in this job

Method chosen (solder / push-fit / PEX)

Reason for the choice

Any dielectric union needed for mixed metals? (Y/N)

Checklist: Copper Soldering Checklist

[ ] Pipe cut square, reamed, and bone dry inside
[ ] Pipe end and fitting socket cleaned to bright copper
[ ] Thin even layer of flux on both surfaces
[ ] Fitting seated fully with a slight twist
[ ] Heated the fitting not the solder; solder melts on contact with the joint
[ ] Complete silver ring around the full circumference
[ ] Wiped flux residue off after cooling; lead-free solder used

Exercise: Practice Joints on Scrap First

Make practice joints on scrap pipe and inspect them critically before doing a joint that holds water.

• On your scrap solder joint, is there a complete shiny ring with no gaps or drips?

• Did the flux stay light, or did it smoke and char from too much heat?

• On a push-fit joint, did you mark and reach the correct insertion depth?

• On a PEX crimp, did the go/no-go gauge confirm the ring is properly compressed?

Checklist: Push-Fit and PEX Checklist

[ ] Pipe cut square and deburred inside and out
[ ] Copper sanded smooth where the O-ring seals; PEX stiffener inserted if required
[ ] Insertion depth marked from the fitting gauge
[ ] Fitting pushed straight on until pipe reaches the depth mark and seats
[ ] Joint tugged to confirm the grip ring locked
[ ] PEX crimp rings checked with the go/no-go gauge
[ ] Local code on push-fit use and joint accessibility confirmed

Your Action Plan

1. Walk the house and complete the Whole-House Shut-Off Map, operating each valve once to find any seized stop now
2. Assemble the DIY plumbing toolkit, including a basin wrench, tubing cutter, plungers, and a closet auger
3. Check house pressure with a hose-bib gauge and confirm it sits between 40 and 80 psi
4. Fix your most annoying drip: diagnose the faucet by where it leaks and rebuild it with a matched repair kit
5. Replace one worn or weeping angle stop with a reliable quarter-turn or push-fit stop
6. Clean a slow drain the right way by clearing the pop-up and P-trap before any plunger or snake
7. Run the dye test on any suspect toilet and replace the flapper or fill valve as needed

8. Practice copper soldering, push-fit, and a PEX crimp on scrap until each joint is clean and leak-free
9. Log every repair in the Repair Log template and price each job in the Repair Cost & Savings Tracker
10. Build a small spare-parts shelf of common washers, cartridges, supply lines, flappers, and fittings