

Trainer Test Guide

Verbal tests for each Sunwave booklet and guide

This guide is for trainers. It holds the verbal test for every Sunwave-specific section in the Training Hub. Textbook chapters are not covered here, for those the trainer uses the book's own end-of-chapter test.

HOW TO RUN A TEST

- The trainee tells you they are ready. Don't chase them for it.
- Ask the questions out loud and let them answer in their own words.
- Model answers are a guide, not a script. You are judging whether they actually understand it.
- Test along the way too, not only at the end of a section.
- If they don't pass, send them back to the material and retest. That is the point of this.
- Only after they pass can they submit the section for points.

Keep this document with you. Trainees should not have a copy.

Lv. 1 Plumbing

Level 1 • Booklet

Foundational section. The trainee should be able to explain how a house moves water in and waste out without prompting.

QUESTIONS

1. Walk me through where water goes from the street to a shower head.

Good answer: Meter → main shutoff (basement or crawl space) → cold branches to fixtures → cold into the water heater → hot branches out to sinks, showers, washer, dishwasher.

2. What does a PRV do, and what is it always paired with?

Good answer: Controls water pressure entering the home. Paired with an expansion tank, which absorbs the extra pressure created when water heats up. Small, 1–2 gallon, installed near the heater.

3. What is a trap, and what does it actually do?

Good answer: The curved pipe under a fixture that holds water. That water seal blocks sewer gas from entering the home.

4. What do vent pipes do?

Good answer: Let air into the drainage system so pressure and flow stay correct.

5. Gate valve versus ball valve.

Good answer: Gate lifts or lowers a gate, on/off only, not for controlling flow. Ball is a quarter turn, full on or off, fast and reliable.

6. On a shower valve, what stays in the wall and what gets replaced?

Good answer: The valve body stays in the wall permanently. Only the cartridge or trim gets replaced when something breaks.

7. When does a job need a sewage pump?

Good answer: When waste has to go uphill, such as drains below the main sewer line in a basement. It grinds and lifts the waste so it can drain out.

8. What makes a hose bib or yard hydrant freeze-proof?

Good answer: It shuts the water off far enough inside the warm house that nothing is left to freeze. A yard hydrant drains underground, and the bottom drain hole should never be plugged.

9. Which water heaters do we install most, and which do we steer away from?

Good answer: Mostly electric tank (50 and 80 gallon) and gas natural vent (40 and 50). Lowboys for tight spaces. We don't generally recommend electric tankless. Gas tankless is efficient but higher up front and not the best choice on well water.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. A customer says they hear banging in the pipes and their fixtures keep failing. What are you checking first?

Good answer: Water pressure. Likely a failed or missing PRV letting street pressure into the house. Gauge it, and check whether there's an expansion tank and whether it still holds air.

S2. A basement bathroom is being added below the level of the sewer line. What does that job need that a normal bathroom doesn't?

Good answer: A sewage pump in a sealed basin, because gravity won't carry the waste up to the main line. It grinds and lifts the waste out through a discharge pipe.

S3. A customer complains a room smells like sewer even though nothing is backed up. Where does your head go?

Good answer: A dry or failed trap seal, or a venting problem. The trap's water is what blocks the gas, so if it evaporated or got siphoned out the smell comes through.

S4. It's the first hard freeze and a customer's outdoor spigot split. What likely happened and what would you recommend?

Good answer: Water sat in the line outside the warm wall and froze. Recommend a freeze-proof hose bib that shuts off inside the heated space, and make sure it drains.

VIDEO CHECK

For each video, ask: "What did you take away from this one?"

- Your Entire Plumbing System — Roger Wakefield
- How Your Home Plumbing Works — Got2Learn
- What is a PRV? — Plumber-Tom
- PRV Replacement — Plumber-Tom
- Expansion Tank — FIX IT
- Water Heater Comparison — Roger Wakefield
- All About Water Heaters — This Old House

Looking for a real, specific takeaway. "It was good" means they didn't watch it.

Plumbing Tools

Level 1 • Booklet

The trainee should know what is on the van, what each thing is for, and which tool is right for the job in front of them.

QUESTIONS

1. How does the booklet break the tools up?

Good answer: Bag tools, power tools, and dirt tools, plus a set of other tools that don't fit those three.

2. What is the electrical pen for, and why do we carry one?

Good answer: Checking for live voltage without touching bare wire. Used before working around anything electrical.

3. You just cut a length of PVC or copper pipe. What do you reach for next and why?

Good answer: A reamer, to take the burr off the inside edge so the cut doesn't restrict flow or catch debris. Not every pipe material needs reaming, but these do.

4. Which tool cuts copper, which cuts PEX, and which cuts PVC?

Good answer: For copper, either the small AutoCut cutters in the bag or the Milwaukee copper cutting tool. PEX cutters for PEX. The Milwaukee PVC cutter for PVC.

5. What does the ProPress tool do?

Good answer: Presses copper fittings together to make the joint, instead of soldering them.

6. Name the dirt tools and what each is for.

Good answer: Regular shovel for general digging, trenching shovel for narrow trenches, thin shovel, trowel for fine work, pick axe for hard ground, probe for locating things underground, meter key for opening the meter box.

7. What is the thread cleaner for?

Good answer: Cleaning out threads so a fitting seats and seals properly.

8. What do we use to see inside a drain or sewer line, and what do we use to find where that line runs underground?

Good answer: The sewer camera to see inside the line, and the locator to trace where it runs underground.

9. Which tools on the van are for clearing drains, and what size job is each for?

Good answer: The drill snake for small lines, the drain machine for bigger lines, and the toilet auger specifically for toilets.

10. What safety gear is in the booklet, and when do you use it?

Good answer: Safety glasses any time something could come at your face, and ear protection around loud equipment.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. You need to cut copper in a tight cabinet where you can't swing a tool and don't want open flame near the wall. What are you using?

Good answer: The small orange and grey AutoCut cutters from the bag, since they spin around the pipe in tight space. Then the ProPress to make the joint instead of soldering.

S2. You get to a job and the customer says the water won't shut off at the house. You need to kill it at the street. What do you need?

Good answer: A large flathead or something similar to pry the lid off the meter box, then the meter key to reach down and shut the valve inside.

S3. A drain keeps backing up and the customer wants to know why. What do you bring in to answer that, and what might you need after?

Good answer: The sewer camera to find the cause. If it's underground and needs locating, the locator as well.

S4. You're about to work on something with wiring nearby and you're not sure it's dead. What do you do?

Good answer: Check it with the electrical pen before touching anything, and put safety glasses on.

Plumbing Materials

Level 1 • Guide 1

The trainee should be able to name what they're looking at, say whether it's supply or drain, and know what we do when we find it.

QUESTIONS

1. Run through the materials this booklet covers.

Good answer: PEX, PVC, copper, galvanized, CPVC, cast iron, clay, stainless steel, brass, black iron, black poly, blue poly, Quest, and tubular pipe.

2. Define supply and drain.

Good answer: Supply pipes bring water into the house and connect to fixtures. Drain pipes take waste water away from the house.

3. What does “schedule” refer to?

Good answer: The thickness of PVC pipe.

4. What does PEX stand for, and is it supply or drain?

Good answer: Cross-linked polyethylene. Supply.

5. PEX A versus PEX B, and which do we use?

Good answer: PEX A is more flexible and needs a special tool for fittings. PEX B is more commonly used and needs a crimping tool. PEX B is what we use.

6. What colors and sizes does PEX come in?

Good answer: White, blue, and red. Common sizes are 1/2 inch, 3/4 inch, and 1 inch.

7. You find grey pipe with copper crimp rings in a house. What is it and what do you tell the customer?

Good answer: Quest. It was recalled years ago and is typically good to remove from the house. Connections are crimp rings and compression fittings, common sizes 1/2 and 3/4 inch.

8. Which materials in the booklet are drain materials?

Good answer: PVC, cast iron, clay, and tubular pipe.

9. Pick any three materials from the booklet and tell me supply or drain, and where you’d expect to see them.

Good answer: Any three, as long as they get the use right and can place it in a real house. This is a check on whether they actually read it.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. You’re repiping a house and need supply line. What are you running, and what sizes are you loading on the van?

Good answer: PEX B, since that’s what we use. 1/2 inch, 3/4 inch, and 1 inch, plus the crimping tool and rings.

S2. A kitchen drain in an older home keeps backing up. You pull the trap and the pipe is galvanized. What’s your recommendation?

Good answer: Replace that section with PVC. Galvanized corrodes and builds up, and on a kitchen line the acidic waste makes it worse, so clearing it is only a short-term fix.

S3. You’re digging in a yard and hit a buried orange-brown pipe that’s in sections. What are you probably looking at, and what’s the concern?

Good answer: Clay. It comes in sections with joints that crack and let roots in, so if that’s the sewer line it’s a strong candidate for repair or replacement.

Plumbing Fittings

Level 1 • Guide 2

The trainee should be able to name a fitting, say what it does, and pick the right one to make a given connection.

QUESTIONS

1. What are the main parts of this booklet?

Good answer: Common fitting types, connection methods, PVC fittings, PEX fittings, ferncos / no-hubs / sheer bands, barb fittings, and standard metal fittings.

2. What's the difference between a coupling and an adapter?

Good answer: A coupling joins two separate pipes together. An adapter joins two different types of pipe together.

3. Plug versus cap.

Good answer: A plug goes inside a pipe or fitting to terminate it. A cap goes on the outside. Both end the run.

4. Tee versus wye.

Good answer: Both are three-way connections. A tee connects at a 90 degree angle. A wye is shaped like a Y.

5. What does a bushing do?

Good answer: Lets you increase or decrease the pipe size being used.

6. What does NPT stand for, and which style do we see most?

Good answer: National Pipe Thread. The tapered style is by far the most common.

7. How do you seal a tapered thread, and how does that differ from a non-tapered one?

Good answer: Tapered threads seal with teflon tape and pipe dope. Non-tapered usually seals with a rubber washer.

8. What are garden hose threads, and where do you run into them besides a hose bib?

Good answer: GHT, the thread type used on garden hoses. Also found on washing machine hoses. They need a rubber washer to seal.

9. When would you reach for a fernco, no-hub, or sheer band?

Good answer: To connect to existing pipe, especially when joining different materials or where a standard fitting won't work, like tying new PVC into existing cast iron.

10. Name the common fitting types from the booklet.

Good answer: Coupling, 90, 45, wye, adapter, plug, cap, tee, and bushing.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. You're replacing a section of drain and need to tie new PVC into the existing cast iron. What are you using?

Good answer: A fernco, no-hub, or sheer band to make that transition, since you're joining two different materials.

S2. You're running 1 inch line and need to drop to 3/4 for a branch. What do you grab?

Good answer: A bushing, or the right reducing fitting, to change the pipe size.

S3. A customer's washing machine hose is dripping where it screws onto the valve. What's your first thought?

Good answer: That's a garden hose thread connection, so it seals on a rubber washer. Check whether the washer is missing, flattened, or damaged before anything else.

Simple Pricing

Level 1 • Guide 6

The trainee should be able to price a normal job confidently and explain why the formula, not the level, is the real authority.

QUESTIONS

1. What two things mainly drive a job's price?

Good answer: Time and parts.

2. How should you think about the job levels compared to the formula?

Good answer: The levels are a simple, consistent way to communicate price to a customer. The formula is the real authority on what a job should cost. If the two disagree, trust the formula.

3. How often should you be running the formula?

Good answer: Every job, especially early on, until pricing feels second nature.

4. Name the difficulty factors in the formula.

Good answer: Disgusting, expensive tools, difficult access, skills required, risk, and particular customer.

5. You have an apprentice with you. How does their time count?

Good answer: Cut their time on the job in half so the price stays fair.

6. You do two jobs on one trip. How do you price it?

Good answer: Run the combined time and parts through the formula once, rather than adding both levels together. Multiple jobs on one trip should come out cheaper.

7. Who pays for the first few minutes of looking at a problem?

Good answer: Nobody. We're willing to put in some effort at no charge, so the first five to ten minutes is free.

8. When do you tell a customer there's a diagnostic charge, and how do you say it?

Good answer: Once you can see it's going to take real time to find the problem. You tell them it's more complicated, give them the diagnostic price, and make clear it rolls into whatever solution we propose.

9. Why don't we quote the diagnostic fee before we've started?

Good answer: Because they have nothing to trust yet. It's just a number from a stranger. Once they've watched you work, the number makes sense.

10. Is there an exception to that?

Good answer: Yes. If you already know it's going to be a long diagnosis and can point to a clear reason, like cutting drywall, set that expectation up front.

11. What level is a drain camera inspection, and what changes if you also have to locate the line underground?

Good answer: A camera inspection on its own is a Level 1. If you also have to locate the pipe underground with the locator, it becomes a Level 3.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. A customer asks what a job will cost. It's something you've done many times. Do you quote the level or run the formula?

Good answer: Early on, run the formula every time even when you think you know it. Once you've done that enough, the level becomes a fast shorthand you can quote with confidence, but the formula still settles it.

S2. You're about eight minutes in, you've been up a ladder and into the crawlspace, and it's clear this is a bigger diagnosis. What do you say?

Good answer: Tell them plainly it's more complicated than it looked, give the diagnostic price, and say it rolls into whatever solution you propose. Do it right then, not at the end.

S3. A customer asks for a discount and you're not sure the job is worth doing at that number. What's the right mindset?

Good answer: Being comfortable walking away from a job without selling it is a good place to be. Quote it honestly rather than shaving the number to win it.

Toilets

Level 2 · Guide 3

The trainee should be able to identify what they're looking at, name the parts, and know what to check before ordering or bringing anything to a job.

QUESTIONS

1. Name the toilet varieties from the booklet.

Good answer: Standard two piece, pressure flush / commercial, wall hung, one piece, and upflush.

2. Name the flushing styles.

Good answer: Standard, dual, canister, pressurized, commercial, and free standing.

3. How do variety and flushing style relate to each other?

Good answer: They overlap. Just because a toilet looks different doesn't mean it uses a different flushing style, and the same style can show up across different varieties. You have to look, not assume.

4. Which toilet will you see most, and why is that good news?

Good answer: Standard two piece, by far. They also tend to be the simplest to work on.

5. What differences within two piece toilets do you need to catch, and why does it matter?

Good answer: Round versus elongated bowl, short versus tall bowl height, skirted versus non-skirted, and lever versus dual flush. It matters so you don't bring the wrong items to the job.

6. Name the parts of a standard flush toilet.

Good answer: Fill valve, tank lever, flush valve, flapper, gasket, flush tube, water supply line, wax ring, and flange.

7. What does the fill valve do, and what does the flapper do?

Good answer: The fill valve refills the tank after a flush. The flapper seals the flush valve and lifts to let the tank dump into the bowl.

8. Where does the wax ring sit and what is it doing?

Good answer: Between the bottom of the toilet and the flange, sealing that connection to the drain.

9. What is an upflush toilet for?

Good answer: Situations where waste has to be moved up rather than draining by gravity, such as a bathroom below the level of the main drain.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. A customer wants their toilet replaced and asks you to bring one out. What are you checking before you order or load anything?

Good answer: Bowl shape (round or elongated), bowl height, skirted or not, flush style, and the rough-in. Getting any of those wrong means a second trip.

S2. A toilet runs constantly and the customer says it never stops. Where do you start?

Good answer: Tank components. Usually the flapper isn't sealing or the fill valve isn't shutting off. Check the flapper seat and the fill valve before anything bigger.

S3. A customer says their toilet rocks a little and there's water showing up on the floor around the base. What's going on and what does the fix involve?

Good answer: The seal at the base has failed, so it's the wax ring, and the rocking is usually why. Pull the toilet, check the flange for damage or the wrong height, replace the wax ring, and shim and reset it so it doesn't rock again. If the flange is broken that has to be dealt with too, or the new seal fails the same way.

Pumps

Level 3 · Guide 5

The trainee should be able to tell the pump types apart and explain what actually drives the selection.

QUESTIONS

1. What pump types does the booklet cover?

Good answer: Submersible well pumps, non-submersible well pumps, sump pumps, sewage pumps, and booster pumps.

2. What three things do you consider when choosing a well pump?

Good answer: Well depth, water demand, and pump horsepower.

3. Roughly how much horsepower per hundred feet of well depth?

Good answer: About 0.5 HP for every 100 feet. Deeper wells need more power to lift the water.

4. What is Total Dynamic Head, and what goes into it?

Good answer: It's what you size the pump against. It includes the vertical lift, the pressure needed at the outlet, and friction loss in the piping.

5. What flow rate does a typical home need, and what changes it?

Good answer: Around 8 to 12 GPM. It varies with the number of fixtures and appliances and how many people are in the house.

6. Submersible versus pedestal sump pump.

Good answer: Submersible sits down in the pit, is quieter and typically more powerful, and is better for heavy duty use. Pedestal has the motor up above the sump, which makes it easier to service but less efficient in heavy water flow.

7. What horsepower range covers most residential sump pumps?

Good answer: Roughly 1/3 to 1 HP, chosen based on how much water accumulates and the size of the area.

8. What is a booster pump for, and what pressure range are we usually working toward?

Good answer: Raising water pressure. Residential pressure typically runs 40 to 60 psi, and a booster helps reach or hold that.

9. When is a sewage pump needed rather than a sump pump?

Good answer: When solid waste has to be moved, not just water. It grinds and lifts waste from a low area like a basement up to the main sewer line.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. A customer on a well says their pressure drops off when two showers run at once. How do you think about it?

Good answer: Work out the actual peak demand in GPM against what the pump delivers. If the flow rate was sized for fewer fixtures or more people moved in, the pump may be undersized for the demand, not broken.

S2. A basement keeps taking on water and the existing sump pump can't keep up. What are you looking at?

Good answer: Pump capacity against how much water is actually coming in, and horsepower for the area. Also check the switch is working, since a pump that isn't kicking on looks the same as one that's too small.

S3. A customer wants to finish a basement and add a full bathroom below the sewer line. What does that need?

Good answer: A sewage pump in a sealed basin, because it has to handle solids and lift them up to the main line. A sump pump won't do it.

Filtration

Level 3 • Guide 4

This booklet is built as symptom and cure, so test it that way. The trainee should hear a complaint and know what fixes it.

QUESTIONS

1. How is this booklet laid out?

Good answer: As symptom and cure. You start from what the customer is experiencing and work to the equipment that solves it.

2. Rapid fire. I'll give you the symptom, you give me the cure. Metal fittings corroding.

Good answer: Acid neutralizer.

3. Bacteria in the water.

Good answer: Ultra-violet light.

4. Rust stains, sulfur smell, manganese.

Good answer: Iron filter.

5. Mineral buildup on fixtures, soap won't lather, deposits on dishes, rough on skin and hair.

Good answer: Water softener.

6. Chlorine taste and smell.

Good answer: Reverse osmosis.

7. Sediment in the water, and then high levels of sediment.

Good answer: Cartridge sediment filter for sediment. Spin down sediment filter when the levels are high.

8. Why are there two different answers for sediment?

Good answer: Volume. A cartridge filter handles normal sediment, but heavy sediment loads it up too fast, so a spin down handles the bulk first.

9. A customer needs an acid neutralizer but their water is already hard. What's the concern?

Good answer: A neutralizer makes the water harder. If it's already hard, that can push them into needing a softener too, and the customer should know that before you install it.

10. Before installing any of this equipment, what do you need to work out on site?

Good answer: Space to route the supply lines and fit the tanks, where the backwash discharges to, whether there's power in reach, and whether pre or post filtration is part of the job.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. A customer says soap won't lather and there are spots all over their glassware. What do you tell them?

Good answer: That's hard water. Mineral buildup is the symptom and a water softener is the fix. Check the rest of the house for buildup on fixtures to confirm.

S2. A customer on a well complains of a rotten egg smell and orange staining in the tubs. What are you recommending?

Good answer: An iron filter. Rust staining, sulfur smell, and manganese all point there.

S3. A customer wants better tasting water at the kitchen sink and complains about chlorine. What do you propose?

Good answer: Reverse osmosis for the chlorine taste and smell.

Warranties

Level 3 · Company policy

This one is about judgment and honesty as much as recall. The trainee should be able to handle a claim in front of a customer without getting defensive.

QUESTIONS

1. How long is our warranty, and what does it cover?

Good answer: Three years on qualifying work. It covers a faulty part that Sunwave supplied, or a mistake in the workmanship our team performed. If either happens in that window, we fix it at no cost.

2. Walk me through handling a job that comes in flagged as a warranty claim.

Good answer: Confirm eligibility first, review the job history and whether we did the work and supplied the parts in the last three years. Then evaluate on site. If it's covered, complete the repair at no cost. If it isn't, explain the findings clearly and offer a separate quote.

3. What are the three general things the warranty doesn't cover?

Good answer: Damage from misuse, neglect, or improper care by the customer. Unauthorized modifications or repairs done by others. And issues unrelated to our original work or the parts we supplied.

4. Name the specific jobs and equipment we don't warranty.

Good answer: Hybrid and electric water heaters, drain cleaning even when we camera it, customer-supplied parts and equipment, equipment whose manufacturer warranty is shorter than our three years, anything high water pressure could damage when the customer won't let us fix the pressure, shower cartridges, and anything we install that wasn't our recommended solution as long as that's specified.

5. Why don't we warranty drain cleaning, even when we run a camera?

Good answer: A drain we clear today can clog again from roots, buildup, or use we don't control. The camera shows the condition of the line, it doesn't guarantee the drain stays clear.

6. Why don't we warranty customer-supplied parts?

Good answer: We can't stand behind materials we didn't source. We have no control over their quality or where they came from.

7. A customer won't let us address high water pressure. What happens to the warranty on equipment that pressure could damage?

Good answer: We can't warranty it, because they're blocking us from fixing the root cause of the damage.

8. A customer insists on a solution we recommended against. What protects us?

Good answer: Noting clearly on the job that it wasn't our recommended solution. We can't warranty the outcome of something we advised against, but it has to be specified.

9. How do you handle telling a customer something isn't covered?

Good answer: Don't get defensive and don't just say no. Walk them through what you found, explain clearly why it falls outside the warranty, and offer a fair separate quote. Handled well it still builds trust.

10. A customer is blaming us for something that isn't really our fault. What do you do?

Good answer: Don't decide it alone. Sunwave will often take responsibility anyway because the relationship matters more than being right, but that's a judgment call. Loop in a lead tech or your location leader before committing to anything.

11. Why do warranty callbacks matter to you personally?

Good answer: They're recorded in your KPIs. Quality work the first time shows up in your numbers.

12. You think you made a mistake on a past job. What do you do?

Good answer: Report it to your supervisor. Being honest about mistakes builds customer trust and protects our reputation.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. You're sent to a warranty claim on a water heater we installed two years ago. On site you find the customer had another company work on it six months ago. What now?

Good answer: That's unauthorized outside work, so it's no longer covered. Explain what you found and why that voids it, then offer a separate quote. Stay calm and factual, don't make them feel accused.

S2. A customer calls upset that the drain you cleared three months ago is backing up again, and says it should be under warranty. How do you handle it?

Good answer: Drain cleaning isn't warranted, even with a camera. Explain why, that a line can re-clog from things we don't control. If we cameraed it and found a root cause, this is the moment to revisit that repair recommendation.

S3. A customer is furious and insisting a problem is our fault. You don't think it is, and they're threatening to leave a bad review. What's your move?

Good answer: Don't commit to anything on the spot and don't argue. Get a lead tech or your location leader involved and decide together. We do often go above and beyond, but that call isn't yours to make alone in a heated moment.

Drain Cleaning

Level 4 • Guide

The trainee should be able to run a drain call from arrival to recommendation, and explain why each step is in that order.

QUESTIONS

1. What separates how we do drain cleaning from just running a cable and leaving?

Good answer: We're thorough on diagnosis, we camera nearly every job so we know why the line backed up, and we carry the range of tools to match the fix to the real problem. Clearing it is often followed by a long-term repair, which is the actual solution.

2. Walk me through the first phase on site, before you touch a machine.

Good answer: Talk to the customer and get the history. Check which fixtures are actually affected yourself. Identify the pipe material and layout. Run water and watch how fast it backs up and how it drains. Find your access point. Set price expectations.

3. Why do you check the other fixtures yourself instead of taking one complaint at face value?

Good answer: One slow fixture is a local clog. Multiple fixtures, or a toilet and tub backing up together, means the mainline. That one check decides the machine, the access point, and the size of the job.

4. Why don't you necessarily camera before clearing?

Good answer: If the line is backed up you won't see anything.

5. What questions do you ask the customer, and why do they matter?

Good answer: When it started, has it happened before, is it getting worse, and what normally goes down that drain. A fresh clog behaves differently than one building for months, and a repeat backup points to a structural problem rather than a one-time blockage.

6. Why do you keep water in the line while running the machine?

Good answer: Water carries the debris you cut loose downstream, and gives you an immediate visible sign the moment the blockage breaks and flow returns.

7. Run through the machines and what size line each is for.

Good answer: Quarter inch drill snake at 25 feet for small lines around 1.5 inch, including tub, shower, bathroom sink, and floor drains. Three eighths at 75 feet for 1.5 to 3 inch, mostly inside and kitchen. Five eighths at 100 feet for 3 to 4 inch mainlines.

8. What's the access priority on a mainline, and why that order?

Good answer: Outside cleanout first, then a pulled toilet, then an inside cleanout, then a sink. Outside lets you relieve pressure without risking sewage inside. Sink access limits your machine size and cable head choices, so it's last.

9. Do you always work from upstream of the blockage?

Good answer: No. Often yes, but the real question is where the backed-up water goes the moment it clears. An outside cleanout lets you run up the line back toward the house because the water can escape there without damaging anything. A jetter always runs from downstream, up through the drain. What you avoid is opening the line below a blockage inside the house.

10. Where does working from below become dangerous?

Good answer: Inside the house, and especially on a two-story. If the clog is upstairs and you open the line on the floor below, everything backed up above comes down into that ceiling and the room you're in. Get up there and access it from above, usually by pulling the trap under a vanity sink. Also be careful not to run a cable up into fixtures inside the house.

11. What do you check before opening an interior cleanout?

Good answer: That there's no backed-up water or sewage sitting above it. Have the bucket and towels in place first.

12. Talk me through cable technique.

Good answer: Low torque and high speed with slow steady forward pressure. Let the head do the work. Work it back and forth as you advance, especially around bends. On the quarter inch drill snake, high torque will snap the cable off inside the line.

13. How do you know a cable is binding, and why does it matter?

Good answer: The machine starts working harder, and the cable won't pull back and forth. The head can stick while the back end keeps twisting and building tension, then release suddenly and either pull back out of the drain or twist up in the drum housing.

14. When do you reach for the jetter instead of a cable?

Good answer: Mainline and exterior work, especially old stubborn blockages and bellies where a cable can't get flow moving. It cuts roots, slides past things a cable hangs up on, and you can run a camera while jetting. It needs downstream access, which is part of why we push cleanout installs.

15. When is descaling appropriate, and what's the catch?

Good answer: Only after the line is cleared, and for old cast iron to restore flow and extend its life. Not on galvanized, it can cause a clog or a leak. You also have to plan where the heavy scale debris goes, or it re-clogs the line.

16. What are you actually looking for on the camera?

Good answer: The cause. Root intrusion, shearing, scale, fat buildup. And always rule out a failed sump pump before assuming it's a clog.

17. When do you recommend a repair instead of another cleaning?

Good answer: A bad belly, rough or pitted cast iron, root intrusion, fat that won't clear, a sheared pipe, or a failed prior repair. Galvanized is close to an automatic replace-with-PVC recommendation, especially on kitchen lines.

18. What are the safety non-negotiables?

Good answer: Mask in closed spaces, the correct glove for cable work since the wrong one can wind up in a running cable, eye protection near your face, and never turn the jetter on until the head is already in the line.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. Kitchen sink is slow, house is on PVC, nothing else is backing up. Walk me through it.

Good answer: Fill the sink and watch the drain rate. Ask about the disposal and what goes down it. Check the vent type. Start with the three eighths cable. On PVC, expect fat. Camera after to confirm the cause.

S2. Toilet and tub are both backing up on the first floor. Where do you go?

Good answer: That's a mainline, not a single fixture. Find the outside cleanout first, confirm nothing is backed up above wherever you open, and bring the mainline machine.

S3. Second-story bathroom, toilet and tub and sink all backing up together. Where do you access it?

Good answer: From upstairs, upstream of the blockage. Usually pull the trap under a vanity sink and run from there. Opening it on the floor below sends everything backed up above into that ceiling.

S4. You camera a mainline and find roots at clay pipe joints. It's the third time this year. What do you tell the customer?

Good answer: Show them the footage. Roots don't stop growing and will come back, likely worse, so clearing it again is buying a few months. Recommend the repair now and price it separately from the cleaning.

S5. You're setting up to jet a mainline. Where do you have to run from, and what are you checking first?

Good answer: Downstream of the clog, running up through the line, since that's the only way a jetter works. You need a cleanout or manhole to get in, and you check that when it releases the water has somewhere to go that won't damage anything.

S6. You start with the three eighths, it won't clear, so you move up to the mainline machine. How does that price?

Good answer: Charge for the machine that actually did the job, not both stacked. Picking the wrong one first is on us.

Complex Pricing

Level 4 • Guide

Repipes, waterlines, sewer lines, big filtration, complex water heaters, interior drain replacement. The trainee should show they think before they call for help.

QUESTIONS

1. On a big job, which input actually decides whether it makes money?

Good answer: The hours. Parts, fixtures, footage, and excavator days can all be counted. Hours have to be predicted, and that's where jobs get lost.

2. Why don't level shortcuts work at this size?

Good answer: A level is a fast way to communicate a familiar job. A repipe isn't familiar, every house is different. You run the formula every time and put real thought into the hours.

3. What habit builds your ability to predict hours?

Good answer: After every big job, compare what you quoted to what it actually took. That feedback loop is how experienced techs got good at it.

4. What do you do before you pick up the phone to call for help?

Good answer: Walk the whole job with the Big Job Helper on site, not from the truck. Count and measure everything. Write down specifically what you can't know. Then run the formula and commit to your own number and reasoning.

5. Why form your own number first?

Good answer: You learn far more from being corrected on a real attempt than from being handed an answer, and the call gets much faster because you're asking someone to pressure-test a specific estimate.

6. What photos should the diagnostic expert get, and when?

Good answer: Before the call, not during. A wide shot of each area, close shots of every connection point, the access route including how tight it actually is, a tape measure in frame for scale, the obstacles, and the surroundings like power and where discharge would run.

7. Why does a tape measure in the photo matter?

Good answer: It gives a known reference so they can judge size from the photo. Shoot straight on rather than at a sharp angle, and use good light.

8. How do you open the call?

Good answer: Job, your number, and your reasoning in about thirty seconds. Then go straight to your specific unknowns, that's what you actually need them for.

9. Give me a question that wastes their time and a question that's worth asking.

Good answer: Wasteful: "how much should I charge" with no attempt of your own, or anything the Big Job Helper already answers. Worth asking: "I'm at 14 hours for this repipe, does that sound right for plaster walls and a tight crawlspace," or "what usually takes longer than people expect here."

10. What do you write down from the call?

Good answer: The reasoning, not just the number. Which conditions drove the hours up is the part you're trying to learn. Confirm what is and isn't in scope before you hang up.

11. Name conditions that blow up the hours.

Good answer: Slab and buried lines, tight or wet crawlspaces and hot attics, finished walls and the cutting and patching that follows, plaster over drywall, removing cast iron or galvanized, depth and soil on a dig, driveways and sidewalks

and mature trees, unmarked utilities, moving furniture, permits and inspections, two-story access, and customer decisions made mid-job.

12. How should uncertainty affect your price?

Good answer: Build in a buffer. Uncertainty is a reason to price more carefully, not more cheaply. The instinct to shave the number so they say yes is backwards.

13. Explain quoting a backup price.

Good answer: When a job has a plan A that might not work, you price both paths before starting and walk the customer through both. Here's the cost if it goes as planned, here's what it becomes if we hit this specific problem. Get them comfortable with both before anyone starts.

14. Why do we do that instead of dealing with it if it happens?

Good answer: The customer is never blindsided, you're not renegotiating with a trench open and their water off, and the fallback work gets charged instead of eaten. It also reads as honest.

15. How is the backup price calculated?

Good answer: Through the formula, the same as plan A. If you fall back to it you should be able to do that work profitably without going back to the customer again.

16. When is phased pricing the right call, and how often should it come up?

Good answer: Rarely. You can almost always figure out the scope. But when the first part genuinely has to happen before the rest can be priced, quote that phase, do it, then price what you uncovered. It's honest, and the customer carries that risk since we can't see underground or through walls.

17. You're splitting a single-day job with another van. What's the check?

Good answer: Job value minus materials, divided by three, needs to be at least two thousand dollars. Below that you're costing the other van their quota for the day.

18. What if it doesn't clear that bar?

Good answer: Don't just book it. Talk it through with a lead tech or your location leader, there may be a better way to schedule or structure it.

19. What costs get left out of big quotes?

Good answer: Drywall or plaster repair, a cleaning company, a second tech and the scheduling around them, permits and inspection waiting time, equipment rentals and the pickup and return trips, a tow truck on a waterline pull, return visits like commissioning, and your own setup, protection, and daily cleanup.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. You're quoting a waterline and the customer asks for a number. You think the pull will work but you're not certain. What do you give them?

Good answer: Both numbers. The pull price and the dig price if it fails, explained up front, with the specific thing that would force the switch. Get them comfortable with both before you start.

S2. You've walked a repipe and you're unsure about routing behind finished plaster walls. What's your next move?

Good answer: Write that down as a specific unknown, form your own number anyway, send photos including the wall material and access route, then call and lead with your estimate and go straight to that unknown.

S3. A single-day job would bring in another van. Materials are heavy on it. What do you work out before promising anyone?

Good answer: Subtract materials, divide by three, and check it clears two thousand. Run that before you promise another van, not after.

S4. You finish a big repipe and it took four hours longer than you quoted. What do you do with that?

Good answer: Compare quoted to actual and figure out which condition you underestimated. Tell the expert who helped you how it actually went. That's how your instinct improves and how their next answer gets better.

Big Job Helper

Level 4 • Reference

This is a working checklist, so test whether they can actually use it rather than recite it.

QUESTIONS

1. What is this document for, and when do you open it?

Good answer: Planning a big job. You work through it on site, not from the truck or from memory, before you commit to anything or price it.

2. What three things does it give you for each job type?

Good answer: The questions to ask before you commit, the parts and tools to have on the truck, and the things that need to be lined up ahead of time.

3. Which job types does it cover?

Good answer: Water softener, acid neutralizer, tankless water heater, sewer line repair and replacement, drain repipes, supply line repipes, and waterlines.

4. Your job isn't on the list. What do you do?

Good answer: Use the same three steps anyway. Ask everything up front, build the parts list from the farthest fixture back, and line up whatever the job depends on before day one. Gas lines, wells, septic, remodels, commercial, or anything you haven't done before all belong here.

5. What's the method for building a parts list on a repipe?

Good answer: Start with the farthest out fixture and work back, making a fitting list for each fixture so you have enough to make every connection. Then run the mainline and confirm the tees and wyes for each fixture connection. Think through the venting too.

6. On a water softener or neutralizer, what do you have to sort out before anything else?

Good answer: Space to route the supply lines and fit the tanks, where the backwash discharges to, whether there's an outlet close enough, whether noise is an issue in that location, and whether pre or post filtration is part of the job.

7. What do you have to establish on a tankless water heater?

Good answer: Fuel type, whether the gas line is sized for it, mounting space, intake and exhaust routing, recirculation, and where the condensate runs including whether it needs a neutralizer or pump.

8. On a waterline, what's the question people forget?

Good answer: What the plan is if the pull fails. What the backup is, what it needs, and whether the customer has been primed for it before you start.

9. What gets lined up ahead of time on a sewer line or waterline?

Good answer: Utility markings, equipment rentals, permits if needed, possible drywall repair, and a tow truck on a waterline.

10. What gets lined up on a repipe?

Good answer: Drywall repair, a cleaning company, and scheduling an additional tech to help.

11. Why does every question in this document matter to pricing?

Good answer: Each one maps to hours, and hours decide whether the job makes money. A tight crawlspace, plaster instead of drywall, or a line under a driveway can each swing a job by a day.

SCENARIOS

Read the situation out loud. You are listening for how they think it through, not a memorised answer.

S1. You're sent to quote a whole-house supply repipe. What are you doing first, and what are you counting?

Good answer: Working through the supply repipe questions on site. Counting every fixture including hose spigots and ice makers, checking slab or basement or crawlspace, wall material and how much has to be cut, number of floors, what pipe is coming out, crawlspace conditions, and whether shower valves get replaced.

S2. A customer wants a softener but the only spot is next to a finished bedroom wall. What do you raise with them?

Good answer: That the backwash cycle is loud and that location may be a problem. Also where the discharge would run, whether there's an outlet in reach, and space for the brine tank.

S3. You're planning a drain repipe in an older home with cast iron and plaster walls. What are you flagging as things to line up?

Good answer: Drywall or plaster repair, a cleaning company, and a second tech. Cast iron removal is slow and heavy and plaster makes more mess than drywall, so both need to be in the plan and the price.
