

Tile Installation — Workbook

This workbook turns the course into practice. Each section maps to a course module and gives you exercises to plan a layout, worksheets to spec materials and cuts, and checklists to run each stage in order. Keep it next to your wet saw and mud bucket as you take a real floor or backsplash from dry-lay to sealed grout. The goal is to make the center-out layout, the full-coverage thinset check, and the less-water grout cleanup a habit before you ever call a tile job finished.

Tile, Substrates, and the Materials That Bond Them

Match the tile to the job by its ratings, judge what you are bonding to, and choose the exact thinset, grout, and tools.

Exercise: Rate the Tile and the Location

Before buying, read the tile box and the room and answer these in writing. The ratings, not the showroom, decide if the tile belongs.

- What is the tile: ceramic, porcelain, or natural stone, and how do you know?

- Record the PEI wear rating and confirm it suits the traffic (wall, residential floor, heavy).

- Record the slip rating (DCOF); is it 0.42 or higher for any wet or floor area?

- Is the tile large-format (a side over 15 inches), and does it therefore need a leveling-clip system and a larger trowel?

Exercise: Diagnose the Substrate

Stand at the surface you plan to tile and assess whether it is flat, clean, and rigid enough to bond. The substrate decides whether the tile cracks.

- Push hard on the floor or wall: does it flex or deflect? What does that tell you about adding plywood or membrane?

- Lay a 4-foot level across it: is it flat to within 1/4 inch over 10 feet (1/8 inch for large format)? Note high and low spots.

- Is it clean and sound, with no paint, dust, sealer, or water damage that would break the bond?

- Is this a wet area that needs a waterproof backer or membrane instead of drywall?

Worksheet: Thinset and Grout Selection Sheet

Decide the mortar, trowel, and grout for this job. White thinset under glass and stone; LHT mortar for large format; grout by joint width.

Tile type, size, and location

Thinset choice (gray modified / white modified / LHT or medium-bed)

Trowel notch (1/4 x 1/4 / 1/4 x 3/8 / 1/2 inch or U-notch)

Target back coverage (80% dry area / 95% wet area)

Grout type (sanded / unsanded / epoxy) and why

Joint width and spacer size (1/16 / 1/8 / 3/16 / 1/4 inch)

Sealing needed? (grout / stone tile / none if epoxy)

Checklist: Tools and Materials Ready-to-Start

- Notched trowels sized to the tile, plus a margin trowel and mixing paddle
- Two buckets: one for mortar, one for clean sponging water
- Snap cutter for straight ceramic, wet saw rented for porcelain and curves, angle grinder with diamond blade
- Spacers and, for large format, a tile leveling system with clips and wedges
- Rubber grout float, large grout sponges, and microfiber for haze
- Chalk line, 4-foot level, speed square, tape measure, and knee pads
- Eye and ear protection, N95 mask, and a GFCI outlet for powered tools

Layout, Substrate Prep, and Setting the Field

Balance the cuts off the room center, prep and waterproof the base, then set the field flat with full coverage.

Exercise: Find Center and Balance the Cuts

Snap your reference lines and dry-lay before mixing any mortar. Adjust until the border cuts are equal and comfortable.

- Where did the two opposite-wall midpoints put your first chalk line?
- How did you confirm the second line was square (record the 3-4-5 triangle measurements)?
- After dry-laying from center, how wide are the border cuts at each wall, and are any thin slivers?
- How far did you shift the layout to balance the borders and land a clean tile or grout line at the doorway?

Worksheet: Layout Plan Sheet

Document the pattern, start point, and border cuts so the field cannot drift once mortar covers your lines.
Room and tile size (with grout joint width)

Pattern (straight grid / one-third running bond / other)

Center lines location and square-check result

Border cut width: wall A / wall B / wall C / wall D

Doorway / threshold tile landing

Backsplash bottom row full against counter? Top cut row under cabinets? (Y/N)

Number of layout lines to re-snap every few rows

Checklist: Substrate Prep and Waterproofing Steps

- Combed thinset under backer board and screwed it every 6 to 8 inches
- Left 1/8 inch gaps between sheets and 1/4 inch at walls, staggering seams off the joists
- Taped seams with alkali-resistant mesh in thinset, not paper tape
- Filled low spots with self-leveler and verified flatness with a 4-foot level
- Applied two coats of liquid waterproofing (RedGard / AquaDefense) in wet areas, lapping corners and the drain
- Primed dusty concrete or gypsum self-leveler where the bag required it
- Let leveler and waterproofing cure the full label time before snapping final lines

Exercise: Prove Your Thinset Coverage

Mix, comb, and set a few field tiles, then pull one straight up to read the mortar transfer. Write what you observe and adjust.

- What consistency did the thinset reach (does it hold a ridge without slumping)?

- After combing straight ridges and setting a tile, what percentage of the back showed mortar transfer when you pulled it?

- Did you need a larger notch or back-buttering to reach 80% (dry) or 95% (wet)? What did you change?

- Where did a 4-foot level across several tiles reveal one sitting proud or low while still adjustable?

Cutting Tile Cleanly

Make accurate straight, L, curved, and round cuts with the right tool and finish exposed edges and transitions.

Worksheet: Cut List and Tool Plan

List every non-field cut the job needs and assign the correct tool and measurement, remembering to subtract for grout joints.

Location / tile ID

Cut type (straight / L-notch / outlet / round hole / curve / miter)

Measurement (with grout-joint deduction)

Tool (snap cutter / wet saw / angle grinder / hole saw / nippers)

Finished face up? (Y/N)

Edge finish needed (rubbing stone / trim / bullnose)

Dry-fit confirmed before buttering? (Y/N)

Checklist: Straight Cut Steps

- Measured the gap and subtracted the grout joint on both ends before marking
- Scored ceramic once in a single firm pass on the snap cutter (never twice)
- Fed porcelain and stone slowly into the wet saw with the water pump running
- Eased off pressure at the far edge to avoid blowing out the corner
- Ran identical border cuts off one fence setting for consistency
- Eased exposed cut edges with a rubbing stone

Checklist: Curves, Notches, and Holes Steps

- Cut L-legs on the wet saw stopping exactly at the inside corner (no overcuts)
- Finished inside corners with the grinder or snapped waste with nippers
- Plunge-cut outlet rectangles with the grinder and dry-fit against the box
- Bored pipe holes with a diamond hole saw at moderate speed with water
- Relief-cut and ground curved tiles down to a scribed template line
- Wore eye, ear, and respiratory protection and used a GFCI outlet

Exercise: Plan Edges, Borders, and Transitions

Decide how every exposed edge and room transition is finished before you set the field, since trim is bedded as you go.

- How is each exposed edge finished: metal/PVC profile, bullnose, or miter? Why?

- What transition handles the doorway: T-molding, reducer, or a stone saddle, and does the tile height match?

- List every inside corner and tile-to-tub/counter/dissimilar-material seam that must be flexible caulk, not grout.

- Where will expansion joints fall on a large floor or at the perimeter?

Grouting, Sealing, and Finishing

Pack and strike the grout, clean the haze with minimal water, cure and seal, then inspect the finished job.

Checklist: Grouting Steps

- Confirmed the thinset cured 24 to 48 hours and cleared dried mortar from the joints
- Mixed grout to a stiff toothpaste body, slaked, and remixed without extra water
- Floated grout diagonally at 45 degrees, packing every joint solid with no voids
- Worked 10 to 20 square feet at a time before the grout set
- Struck the joints to a uniform depth with a firm diagonal pass
- Scraped excess off the tile faces with the float edge before it hardened

Worksheet: Grout, Cure, and Seal Log

Track the grout work and the cure and seal schedule so you never seal or wet the grout before it is ready.

Area / room

Grout type and color

Joint width and date grouted

First sponge pass time (15 to 30 min after striking)

Haze removed? method and date

Cure time allowed before use (24 to 72 hrs)

Sealed? sealer product and date (after full cure)

Exercise: Practice the Less-Water Cleanup

Clean a grouted test area or your first section and record how water amount affects the joint. Less water is the rule.

- How long after striking did you wait before the first sponge pass?
 - What happened to joint color and depth when the sponge was too wet versus damp and wrung?
 - How did you shape each joint into a smooth, slightly concave profile?
 - Did a dry microfiber buff clear the haze, or did you need a haze remover, and did you keep acid off fresh grout and stone?
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Exercise: Final Inspection and Care Plan

Once the grout has cured and you have sealed, inspect like a pro and set a maintenance schedule.

- Tap suspect tiles: which ring solid and which sound hollow (a void to address)?
 - Rake a side light: is there lippage or any wavy grout line? Where?
 - Are all inside corners and tile-to-tub/counter seams flexible caulk, not grout, and is the grout color uniform with no washed-out patches?
 - What is your re-seal interval (1 to 3 years by a water-bead test), neutral cleaner, and where are the spare tiles from this shade lot stored?
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Your Action Plan

1. Verify the tile ratings (PEI, slip, absorption) suit the location and buy 10 to 15 percent extra from one shade lot.
2. Assess the substrate for flatness, cleanliness, and rigidity, and decide on backer board, membrane, or self-leveler.
3. Install and flatten the backer board or uncoupling membrane and waterproof any wet areas with a continuous membrane.
4. Find the room center, snap two square lines, and dry-lay to balance the border cuts and kill any slivers.
5. Mix thinset to a peanut-butter body, comb straight ridges, and set the field, pulling a tile to confirm full coverage.
6. Cut borders, L-notches, outlets, and curves with the snap cutter, wet saw, and grinder, dry-fitting before buttering.
7. Finish exposed edges with trim or bullnose and plan thresholds and caulk joints at every movement seam.
8. After the thinset cures, pack grout fully into the joints with a float and strike them to an even depth.
9. Clean with minimal water for a concave joint, buff off the haze, and let the grout cure the full time.
10. Seal the cured grout and any stone, inspect for hollows and lippage, and keep spare tiles for future repairs.

