

# Woodworking & Joinery — Workbook

This workbook turns the course into bench time. Each section pairs hands-on exercises with worksheets and checklists you can clip to your bench, plus editable templates for cut lists, a wood-movement reference, and a sharpening log. Work through it with scrap wood at your side; the goal is calloused hands and completed joints, not just notes.

## Wood, Safety, and the Beginner Tool Kit

Get your material knowledge, shop safety, and starter kit set up before any joint is cut.

### Exercise: Read Three Boards

Take three different boards (ideally one flatsawn, one quartersawn, and a piece of pine) and examine each in good light. For every board, identify the reference face, the likely grain direction for planing, and how you expect it to move with the seasons. Write your reasoning, then take a light plane or chisel pass to test your grain-direction guess.

- Which board is flatsawn and which is quartersawn, and what visual cue told you?  
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- For each board, which direction would you plane to avoid tear-out, and did a test pass confirm it?  
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- Rank the three boards by how much you expect each to move across its width, and explain why.  
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- Which of these would you choose for a tabletop that must stay flat, and why?  
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### Worksheet: Shop Safety Setup Audit

Walk your workspace and fill in each field honestly. Anything you cannot complete becomes the top of your shopping or setup list before you run a machine.

Table saw riving knife or splitter installed (yes/no)  
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Push sticks present and within reach of the saw (yes/no)  
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Dust extraction or collection method at the tool  
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Air filtration or ventilation method for fine dust  
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Respirator type and rating (e.g., N95/FFP2 or P100 half-mask)  
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Hearing protection rating (dB)  
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Eye protection available at every machine (yes/no)  
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Location of fire-safe container for oily rags

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### Checklist: Beginner Tool Kit Acquisition Checklist

- Buy a 150 mm combination square and check it for true against a known straightedge
- Acquire bevel-edge bench chisels in 6, 12, 19, and 25 mm widths
- Get a marking gauge and a marking knife
- Obtain a crosscut and rip saw, or a dozuki plus a ryoba pull saw
- Source one No. 4 or No. 5 bench plane and a block plane
- Buy a wooden or dead-blow mallet, four bar clamps, and quality PVA glue
- Set up a solid, heavy work surface at hanging-knuckle height with at least one vise
- Confirm the bench top is flat with a straightedge

## Sharpening, Measuring, and Cutting to a Line

Build the three invisible skills under every joint: a keen edge, an accurate layout, and a sawn line you can hit.

### Exercise: Sharpen and Prove It

Take one chisel through the full sharpening routine: flatten the back, hone the bevel at 25 to 30 degrees through your grit progression, and remove the burr. Then prove the edge by paring a clean curl of end grain from a pine block and slicing through a sheet of paper held in the air. Log the result in your sharpening log template.

- What grit progression did you use, and which stage took the longest?

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- Did the edge pare a glassy end-grain surface, or did it crush the fibers?

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- How did the edge feel against a fingernail with zero pressure?

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- What will you change next time to reach a keen edge faster?

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### Exercise: Twenty Lines Drill

On scrap pine or poplar, knife and square twenty crosscut lines. Saw each on the waste side down to a scribed baseline, then check each cut with a square for square across the face and the edge. Grade each cut pass or fail and watch your accuracy climb across the twenty.

- How many of the first five cuts were square in both directions versus the last five?

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- Where did your cuts tend to drift, and how did you correct mid-cut?

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- Did marking with a knife instead of a pencil change the crispness of the cut?

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- What stance or grip adjustment made the biggest difference?

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### Worksheet: Layout Reference Plan

Before cutting any real joint, complete this layout sheet for the part so every measurement traces back to a single reference.

Part name and finished dimensions

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Chosen reference face mark and reference edge mark

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Marking gauge setting and the edge it registers from

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Which lines are knife lines versus pencil lines

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Which dimensions are taken directly from a mating part rather than a ruler

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Square used to carry lines across faces (and confirmed true?)

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### Checklist: Before-You-Cut Accuracy Checklist

- Reference face and edge chosen and clearly marked
- All mating dimensions transferred directly from their partner part
- Final fitting lines scribed with a knife, not a pencil
- Waste side of every line marked with an X
- Chisels re-honed and tested sharp
- Square verified true before use

## Core Joinery: Mortise-and-Tenon and Dovetails

Cut and fit the two joints that build most fine furniture, and learn to choose the right joint for the job.

### Exercise: Cut One Mortise-and-Tenon

In practice stock around 21 mm thick, cut a single mortise-and-tenon. Mark and cut the mortise first, set the tenon roughly one-third the stock thickness, then mark the tenon directly from the finished mortise and fit it. Aim for a firm hand-press fit with tight shoulders.

- Did you cut the mortise before marking the tenon, and why does order matter?

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• What was your tenon thickness relative to the stock, and how did you choose it?

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• Did the joint seat with hand pressure or require a mallet, and what would you adjust?

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• How tight and square were the shoulders against the mortised face?

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### Exercise: Five Practice Dovetails

Cut five through-dovetail joints in poplar, tails first. Set your slope (try 1:8 for the hardwood feel), scribe baselines to board thickness, saw the tails, trace them onto the pin board, then cut and pare the pins to fit. Compare your fifth joint to your first.

- What slope ratio did you use, and how did the corners hold up at that angle?

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• Where were the gaps on your first joint, and were they on the pins or the tails?

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• Did paring the inside faces (never the outside) help you tighten the fit?

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• What single change between joint one and joint five improved the fit the most?

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### Worksheet: Joint Selection Decision Sheet

For each joint in a planned piece, work through the questions and record the joint you will use, so every choice is deliberate.

Junction or part being joined

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Forces acting on it (racking / pull-apart / shear / gravity)

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Will the joint be visible and does its look matter?

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Must this part move seasonally or stay rigid?

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Chosen joint (mortise-and-tenon / dovetail / dado / rabbet / edge joint / frame-and-panel)

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Reason this is the simplest joint that satisfies all three answers

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### Checklist: Joint Fitting Checklist

- Mortise cut and pared square before the tenon was marked
- Tenon and pins marked directly from their mating part
- Every cut made on the waste side of the scribed line
- Dry-fit completed before any glue
- Fit is firm hand pressure, not mallet-forced
- Inside faces pared to tighten, visible outside edges left untouched

## Milling, Finishing, and Your First Build

Four-square your stock, apply the right finish, and carry a complete piece from cut list to signed bottom.

### Exercise: Mill a Board Four-Square

Take one rough or cupped board and bring it to four flat, square, parallel faces of consistent thickness, by machine or by hand with winding sticks and three planes. Reference every operation off your first flattened face. Verify flat and square with a straightedge and square at each stage.

- Which face did you choose as the reference, and how did you confirm it was flat?

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- How did you detect and remove twist (winding sticks or jointer)?

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- Did the board move after the first cuts, and how did you handle the released stress?

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- What does flat actually look and feel like to you now versus before this exercise?

### Exercise: Finish a Test Panel

Prepare a scrap panel through 120, 180, and 220 grit (no skipped grades), then apply a wiping-oil finish in two to four thin coats, scuffing lightly between coats. Compare a sanded-only half to a finished half, and dispose of the oily rag safely.

- Did any sanding scratches appear only after the finish went on, and which grit caused them?

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- How did the wood's color and figure change between bare and oiled?

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- How many coats gave you the sheen and protection you wanted?

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- How did you dispose of the oily rag, and why does this matter?

### Worksheet: First Build Project Planner

Plan your first complete piece end to end. Fill every field before milling so the build has no surprises. Project description and overall finished dimensions

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Marquee joints used and where (mortise-and-tenon / dovetail)

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Species chosen and why it suits a first build

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Full cut list (part, finished size, joint at each end)

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Planned glue-up stages and order

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Chosen finish and number of coats

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Estimated bench hours

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### Checklist: Glue-Up Rehearsal Checklist

- Full dry assembly completed and confirmed square
- All clamps, cauls, damp rag, and square laid out within reach
- Confirmed all parts can be assembled within the glue's open time
- Thin even film of glue applied, no pooling
- Both diagonals measured equal after clamping
- Squeeze-out wiped before it skins over
- Clamps firm and even, not crushing the joints

### Your Action Plan

1. Assemble the core hand-tool kit and set up a solid, flat bench at the correct height.
2. Sharpen every chisel and plane iron to a proven, paper-slicing edge and start a sharpening log.
3. Run the twenty-lines sawing drill until most cuts are square in both directions.
4. Cut one full mortise-and-tenon, mortise first, to a firm hand-press fit.
5. Cut five practice dovetails, tails first, and track the improvement from joint one to five.
6. Mill a rough board four-square and verify it with a straightedge and square.
7. Finish a test panel through a clean grit progression and a wiping oil, disposing of the rag safely.
8. Plan a small first piece with a complete cut list using both marquee joints.
9. Dry-assemble, rehearse the glue-up, then glue up checking diagonals for square.
10. Apply the final finish, sign the bottom, and write down three things to do better on the next build.









