Side table

Overall size: 20" W × 20" D × 24" H



Parts	Sheets and boards	Saw kerf	Units
12 (9 different)	**3**	**1/8"**	**Inches**

Materials to buy

Qty	Material	Label in plan	Board feet
1	8/4 Red Oak, 5-1/2" × 8'	Board A	7.3
2	4/4 Red Oak, 5-1/2" × 8'	Board B, Board C	7.3
8	Figure-8 desktop fasteners	Hardware	

Cost

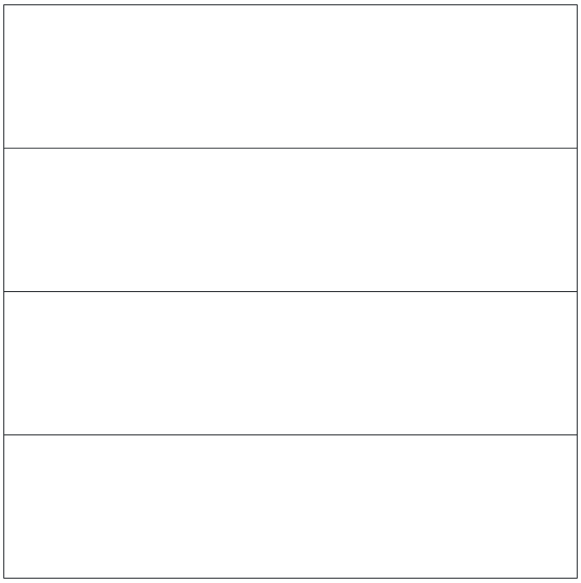
In USD, at this project's prices

Qty	Item	Price	Per	Total
2	4/4 Red Oak, 5-1/2" × 8' (7.3 board feet)	$6.00	a board foot	$44.00
1	8/4 Red Oak, 5-1/2" × 8' (7.3 board feet)	$6.00	a board foot	$44.00
8	Figure-8 desktop fasteners	$0.45	each	$3.60
Wood				**$88.00**
Hardware				**$3.60**
Total				**$91.60**
$49.64 of the wood is offcuts and kerf (56%), counted in Wood above.				

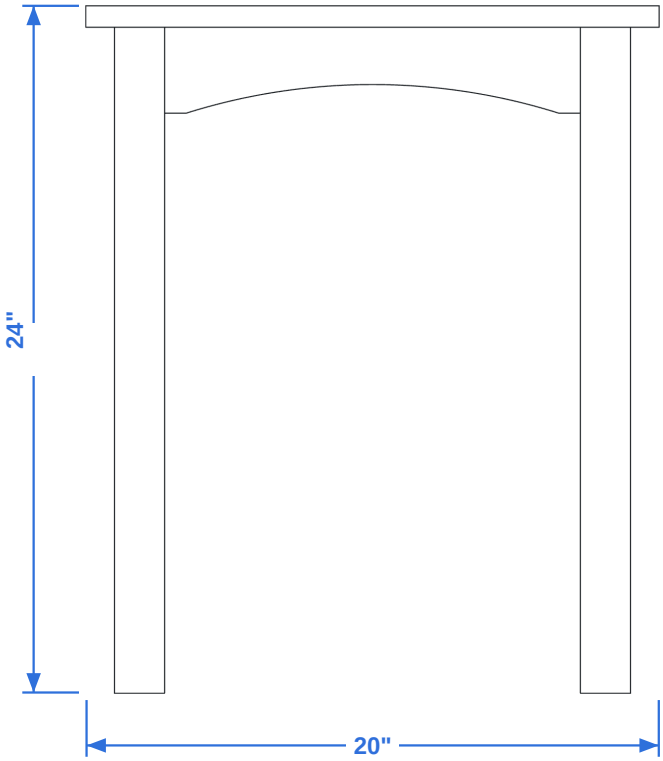
Views

Use the written dimensions; don't scale the drawing.

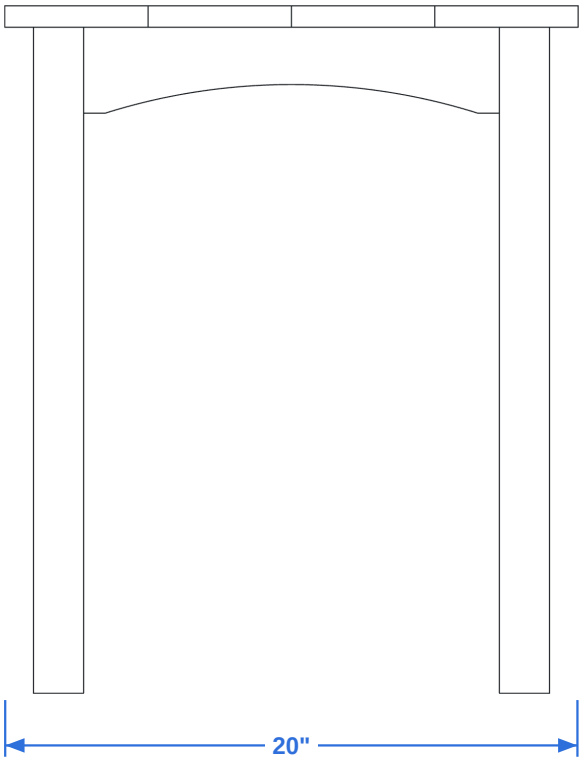
Top



Front

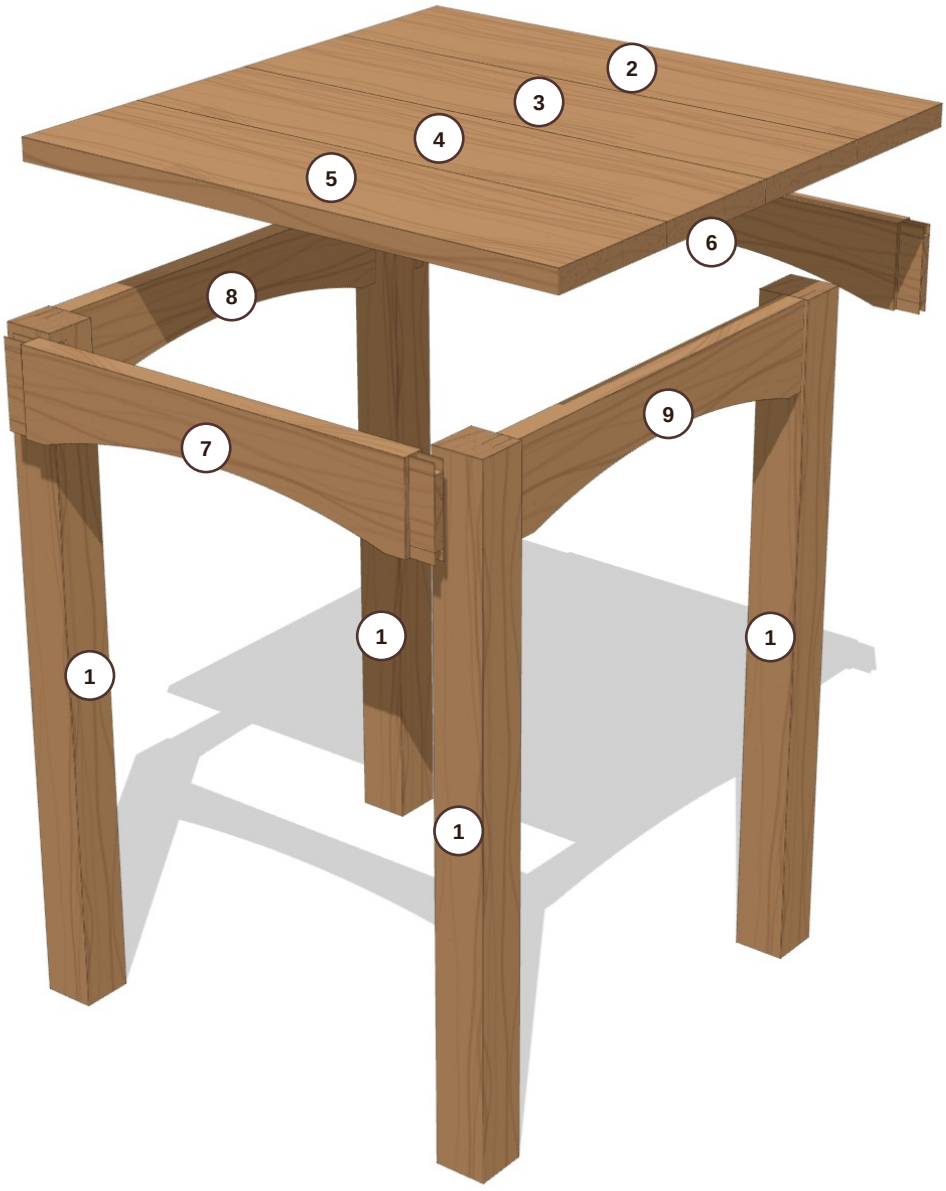


Right side



Exploded view

Every part by its number in the cut list



Cut list

Length runs with the grain

#	Part	Qty	Length	Width	Thick	Material	From	Shape	Grain
1	Leg	4	23-1/4"	1-3/4"	1-3/4"	Red Oak	A		Length
2	Top board 1	1	20"	5"	3/4"	Red Oak	C		Length, moves 3/32"
3	Top board 2	1	20"	5"	3/4"	Red Oak	C		Length, moves 3/32"
4	Top board 3	1	20"	5"	3/4"	Red Oak	C		Length, moves 3/32"
5	Top board 4	1	20"	5"	3/4"	Red Oak	C		Length, moves 3/32"
6	Back apron	1	16-1/4"	3"	3/4"	Red Oak	B	Arch on the bottom edge, 1" rise	Length, moves 1/16"
7	Front apron	1	16-1/4"	3"	3/4"	Red Oak	B	Arch on the bottom edge, 1" rise	Length, moves 1/16"
8	Left apron	1	16-1/4"	3"	3/4"	Red Oak	B	Arch on the bottom edge, 1" rise	Length, moves 1/16"
9	Right apron	1	16-1/4"	3"	3/4"	Red Oak	B	Arch on the bottom edge, 1" rise	Length, moves 1/16"

Shaped parts: cut the rectangle to the size listed, then trace the full-size template on it and cut to the line. Templates are in Export shop plan.

Wood movement

- Top board 1 (flat-sawn red oak, 5" across the grain) moves about 3/32" between 30% and 60% humidity.
- Top board 2 (flat-sawn red oak, 5" across the grain) moves about 3/32" between 30% and 60% humidity.
- Top board 3 (flat-sawn red oak, 5" across the grain) moves about 3/32" between 30% and 60% humidity.
- Top board 4 (flat-sawn red oak, 5" across the grain) moves about 3/32" between 30% and 60% humidity.
- Top board 1 on Back apron: 2 figure-8 fasteners, each in a shallow recess in Back apron's top edge, screwed up into Top board 1.
- Top board 2 on Left apron: 1 figure-8 fastener in a shallow recess in Left apron's top edge, screwed up into Top board 2.
- Top board 3 on Left apron: 1 figure-8 fastener in a shallow recess in Left apron's top edge, screwed up into Top board 3.
- Top board 2 on Right apron: 1 figure-8 fastener in a shallow recess in Right apron's top edge, screwed up into Top board 2.
- Top board 3 on Right apron: 1 figure-8 fastener in a shallow recess in Right apron's top edge, screwed up into Top board 3.
- Top board 4 on Front apron: 2 figure-8 fasteners, each in a shallow recess in Front apron's top edge, screwed up into Top board 4.

Assembly

Which parts join, and how

Part	Joins	Joinery	Each	Where
Back apron	Leg	Mortise and tenon	1	left end
Back apron	Leg	Mortise and tenon	1	right end
Left apron	Leg	Mortise and tenon	1	back end
Left apron	Leg	Mortise and tenon	1	front end
Right apron	Leg	Mortise and tenon	1	back end
Right apron	Leg	Mortise and tenon	1	front end
Front apron	Leg	Mortise and tenon	1	left end
Front apron	Leg	Mortise and tenon	1	right end

Joinery

From the left end and top edge as drawn in the diagrams

#	Part	Joint	Size	Where	Face
1	Leg ×2	Mortise	3/8" wide × 2-1/4" long × 7/8" deep	20-5/8" from the left end, 5/16" from the top edge	Mirror pair
1	Leg ×2	Mortise	3/8" wide × 2-1/4" long × 7/8" deep	20-5/8" from the left end, 7/8" from the top edge	Mirror pair
1	Leg ×2	Mortise	3/8" wide × 2-1/4" long × 7/8" deep	20-5/8" from the left end, 1-1/16" from the top edge	Mirror pair
1	Leg ×2	Mortise	3/8" wide × 2-1/4" long × 7/8" deep	20-5/8" from the left end, 0" from the top edge	Mirror pair
6	Back apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the left end	Centered
6	Back apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the right end	Centered
7	Front apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the left end	Centered
7	Front apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the right end	Centered
8	Left apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the left end	Centered
8	Left apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the right end	Centered
9	Right apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the left end	Centered
9	Right apron	Tenon	3/8" thick × 2-1/4" wide × 7/8" long	at the right end	Centered

Hardware

Qty	Item	On parts
8	Figure-8 desktop fasteners	6, 7, 8, 9

Leftovers

Usable offcuts after cutting

Piece	Length	Width	Thick	Material
Offcut A1	96"	3-5/8"	1-3/4"	Red Oak
Offcut A5	2-1/2"	1-3/4"	1-3/4"	Red Oak
Offcut B1	96"	2-3/8"	3/4"	Red Oak
Offcut B5	30-1/2"	3"	3/4"	Red Oak
Offcut C1	96"	3/8"	3/4"	Red Oak
Offcut C5	15-1/2"	5"	3/4"	Red Oak

Layout

Where each shelf and divider goes, from one edge

Mark mating parts together from the same reference edge, or use a story stick or a spacer block, so each pair matches even if your tape is off.

2, 5 Top board 1 and Top board 4 ×2: in from the left edge (20" long)

#	Part	On	Left face	Right face
1	Leg	Underside	1"	2-3/4"
8	Left apron	Underside	1-1/8"	1-7/8"
1	Leg	Underside	17-1/4"	19"
9	Right apron	Underside	18-1/8"	18-7/8"



3, 4 Top board 2 and Top board 3 ×2: in from the left edge (20" long)

#	Part	On	Left face	Right face
8	Left apron	Underside	1-1/8"	1-7/8"
9	Right apron	Underside	18-1/8"	18-7/8"

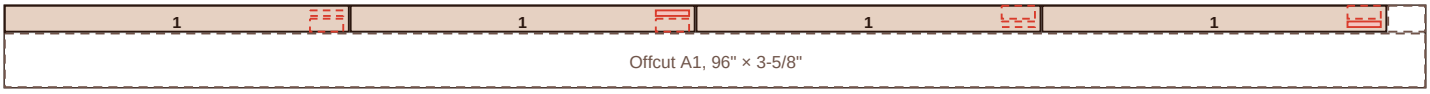


Cutting diagrams

Grey gaps are saw kerf (1/8"). Red is joinery.

Board A 8/4 Red Oak, 5-1/2" × 8'

31% used

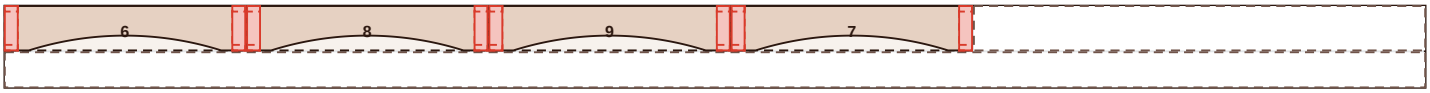


96" long, grain runs left to right — 5-1/2" wide

1	Leg ×4	23-1/4" × 1-3/4"

Board B 4/4 Red Oak, 5-1/2" × 8'

37% used

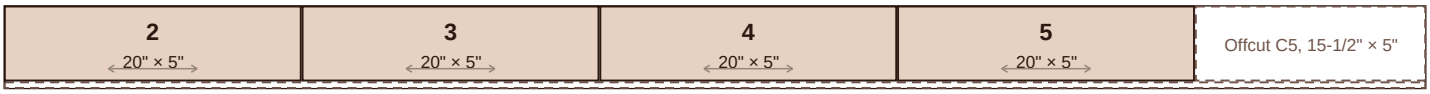


96" long, grain runs left to right — 5-1/2" wide

6	Back apron	16-1/4" × 3"	**7**	Front apron	16-1/4" × 3"
8	Left apron	16-1/4" × 3"	**9**	Right apron	16-1/4" × 3"

Board C 4/4 Red Oak, 5-1/2" × 8'

76% used



96" long, grain runs left to right — 5-1/2" wide

2	Top board 1	20" × 5"	**3**	Top board 2	20" × 5"
4	Top board 3	20" × 5"	**5**	Top board 4	20" × 5"

Cut sequence

Check off each step as you go

- [ ] **1** Get Board A: 8/4 Red Oak, 5-1/2" × 8'.
- [ ] **2** From Board A, cut Leg to 23-1/4" long × 1-3/4" wide.
- [ ] **3** From Offcut A2, cut Leg to 23-1/4" long × 1-3/4" wide.
- [ ] **4** From Offcut A3, cut Leg to 23-1/4" long × 1-3/4" wide.
- [ ] **5** From Offcut A4, cut Leg to 23-1/4" long × 1-3/4" wide.
- [ ] **6** Get Board B: 4/4 Red Oak, 5-1/2" × 8'.
- [ ] **7** From Board B, cut Back apron to 16-1/4" long × 3" wide.
- [ ] **8** From Offcut B2, cut Left apron to 16-1/4" long × 3" wide.
- [ ] **9** From Offcut B3, cut Right apron to 16-1/4" long × 3" wide.
- [ ] **10** From Offcut B4, cut Front apron to 16-1/4" long × 3" wide.
- [ ] **11** In Back apron (Board B), cut 2 tenons to fit the mating parts (sizes under Joinery).
- [ ] **12** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **13** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **14** In Left apron (Board B), cut 2 tenons to fit the mating parts (sizes under Joinery).
- [ ] **15** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **16** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **17** In Right apron (Board B), cut 2 tenons to fit the mating parts (sizes under Joinery).
- [ ] **18** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **19** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **20** In Front apron (Board B), cut 2 tenons to fit the mating parts (sizes under Joinery).
- [ ] **21** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **22** In Leg (Board A), cut a mortise to fit the mating parts (sizes under Joinery).
- [ ] **23** Get Board C: 4/4 Red Oak, 5-1/2" × 8'.
- [ ] **24** From Board C, cut Top board 1 to 20" long × 5" wide.
- [ ] **25** From Offcut C2, cut Top board 2 to 20" long × 5" wide.
- [ ] **26** From Offcut C3, cut Top board 3 to 20" long × 5" wide.
- [ ] **27** From Offcut C4, cut Top board 4 to 20" long × 5" wide.
- [ ] **28** Glue up Top: Top board 1, Top board 2, Top board 3 and Top board 4.

Setup sheets

Set each machine once, then make every cut on its list

Setup 1 Get the stock

- [ ] Board A: 8/4 Red Oak, 5-1/2" × 8' — step 1
- [ ] Board B: 4/4 Red Oak, 5-1/2" × 8' — step 6
- [ ] Board C: 4/4 Red Oak, 5-1/2" × 8' — step 23

Setup 2 Table saw: rip fence at 5"

Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Board C: Top board 1 to width — #2 step 24

Setup 3 Table saw: rip fence at 3"

Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Board B: Back apron to width — #6 step 7

Setup 4 Table saw: rip fence at 1-3/4"

Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Board A: Leg to width — #1 step 2

Setup 5 Miter saw: stop block at 23-1/4"

Clamp a stop block on the fence 23-1/4" from the blade, and square one end of each piece before it goes to the stop.

- [ ] Leg: to length — #1 step 2
- [ ] Leg: to length — #1 step 3

Setup 6 Table saw: rip fence at 1-3/4"

Same setting as setup 4.
Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Offcut A2: Leg to width — #1 step 3
- [ ] Offcut A3: Leg to width — #1 step 4

Setup 7 Miter saw: stop block at 23-1/4"

Same setting as setup 5.
Clamp a stop block on the fence 23-1/4" from the blade, and square one end of each piece before it goes to the stop.

- [ ] Leg: to length — #1 step 4
- [ ] Leg: to length — #1 step 5

Setup 8 Table saw: rip fence at 1-3/4"

Same setting as setup 4.
Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Offcut A4: Leg to width — #1 step 5

Setup 9 Miter saw: stop block at 20"

Clamp a stop block on the fence 20" from the blade, and square one end of each piece before it goes to the stop.

- [ ] Top board 1: to length — #2 step 24
- [ ] Top board 2: to length — #3 step 25

Setup 10 Table saw: rip fence at 5"

Same setting as setup 2.
Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Offcut C2: Top board 2 to width — #3 step 25
- [ ] Offcut C3: Top board 3 to width — #4 step 26

Setup 11 Miter saw: stop block at 20"

Same setting as setup 9.
Clamp a stop block on the fence 20" from the blade, and square one end of each piece before it goes to the stop.

- [ ] Top board 3: to length — #4 step 26
- [ ] Top board 4: to length — #5 step 27

Setup 12 Table saw: rip fence at 5"

Same setting as setup 2.
Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Offcut C4: Top board 4 to width — #5 step 27

Setup 13 Miter saw: stop block at 16-1/4"

Clamp a stop block on the fence 16-1/4" from the blade, and square one end of each piece before it goes to the stop.

- [ ] Back apron: to length — #6 step 7
- [ ] Left apron: to length — #8 step 8

Setup 14 Table saw: rip fence at 3"

Same setting as setup 3.
Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Offcut B2: Left apron to width — #8 step 8
- [ ] Offcut B3: Right apron to width — #9 step 9

Setup 15 Miter saw: stop block at 16-1/4"

Same setting as setup 13.
Clamp a stop block on the fence 16-1/4" from the blade, and square one end of each piece before it goes to the stop.

- [ ] Right apron: to length — #9 step 9
- [ ] Front apron: to length — #7 step 10

Setup 16 Table saw: rip fence at 3"

Same setting as setup 3.
Measure from the fence to the nearest tooth of the blade, and make a test cut in scrap.

- [ ] Offcut B4: Front apron to width — #7 step 10

Setup 17 Table saw: tenons 7/8" long, 3/8" thick

A dado stack as wide as it goes. The fence at 7/8" to the far side of the stack stops the shoulder.
Blade 3/16" high for the cheeks, one pass each face, then 3/8" high for the edge shoulders.

- [ ] Back apron: tenon at the left end — #6 step 11
- [ ] Back apron: tenon at the right end — #6 step 11
- [ ] Front apron: tenon at the left end — #7 step 20
- [ ] Front apron: tenon at the right end — #7 step 20
- [ ] Left apron: tenon at the left end — #8 step 14
- [ ] Left apron: tenon at the right end — #8 step 14
- [ ] Right apron: tenon at the left end — #9 step 17
- [ ] Right apron: tenon at the right end — #9 step 17

Setup 18 Router: 3/8" spiral bit, 7/8" deep

Plunge in passes of 1/4" or less, the edge guide 5/16" from the face to the near side.
Square the ends with a chisel, or round the tenons to match.

- [ ] Leg ×2: mortise 20-5/8" from the left end, 5/16" from the top edge, 2-1/4" long — #1 steps 12, 13
- [ ] Leg ×2: mortise 20-5/8" from the left end, 7/8" from the top edge, 2-1/4" long — #1 steps 15, 18
- [ ] Leg ×2: mortise 20-5/8" from the left end, 0" from the top edge, 2-1/4" long — #1 steps 16, 19
- [ ] Leg ×2: mortise 20-5/8" from the left end, 1-1/16" from the top edge, 2-1/4" long — #1 steps 21, 22

Setup 19 Glue-ups

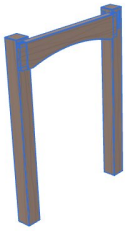
Dry fit each one first, then glue and clamp it.

- [ ] Glue up Top: Top board 1, Top board 2, Top board 3 and Top board 4. — step 28

Assembly steps

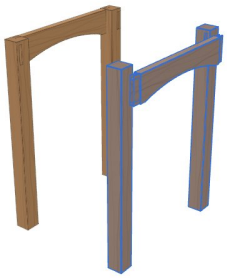
The order it goes together

You need at least 3 clamps of 24".



1 Glue up Frame 1

Parts Leg ×2 (part 1), Left apron (part 8)
Order Start with Leg. Add Left apron. Close it with Leg.
Joints Left apron and Leg: 2 mortise and tenons, glue
Glue Glue every joint.
Clamps 1 clamp of 24".



2 Glue up Frame 2

Parts Leg ×2 (part 1), Right apron (part 9)
Order Start with Leg. Add Right apron. Close it with Leg.
Joints Right apron and Leg: 2 mortise and tenons, glue
Glue Glue every joint.
Clamps 1 clamp of 24".



3 Glue up Panel

Parts Top board 1 (part 2), Top board 2 (part 3), Top board 3 (part 4), Top board 4 (part 5)
Joints Top board 1 and Top board 2: 1 edge joint, glue
Top board 2 and Top board 3: 1 edge joint, glue
Top board 3 and Top board 4: 1 edge joint, glue
Glue Glue every joint.
Clamps 3 clamps of 24", and 2 cauls across the ends to keep it flat.



4 Glue up Side table

Parts Leg ×4 (part 1), Back apron (part 6), Front apron (part 7), Left apron (part 8), Right apron (part 9)
Order Start with Leg. Add Left apron, Leg, Back apron, Leg, Front apron and Right apron. Close it with Leg.
Joints Back apron and Leg: 2 mortise and tenons, glue
Front apron and Leg: 2 mortise and tenons, glue
Glue Glue every joint.
Clamps 2 clamps of 24".



5 Screw Panel to Side table

Parts Top board 1 (part 2), Top board 2 (part 3), Top board 3 (part 4), Top board 4 (part 5), Back apron (part 6), Front apron (part 7), Left apron (part 8), Right apron (part 9)

Joints Back apron and Top board 1: 2 figure-8 desktop fasteners, no glue

Left apron and Top board 2: 1 figure-8 desktop fastener, no glue

Left apron and Top board 3: 1 figure-8 desktop fastener, no glue

Right apron and Top board 2: 1 figure-8 desktop fastener, no glue

Right apron and Top board 3: 1 figure-8 desktop fastener, no glue

Front apron and Top board 4: 2 figure-8 desktop fasteners, no glue

Glue No glue: the screws hold it.

Clamps No clamps.