Name:_____ Block:_____ Date:_____

FRICTION FIT BOX
INFORMATION AND PROCEDURE

Abstract:

Students are going to be creating wood boxes with various materials that are all customized in their own way. Students will research and design customization techniques, create a bill of materials, break out stock, build their boxes and finally, self assess and reflect on their projects.

Boxes will be:

- made during class time with proper safety procedures
- designed and developed individually
- made of student's choice of wood
- customized (trim, spline mitres, dividers, tray etc.)
- of overall final dimensions:
  - Length – 10"
  - Width – 5"
  - Height – 3"
  - Material thickness – ¾"

Much of the information in this document was attained from *Fix This Build That*. Thank you to them for their box plans.

Research of Customization

Sketch from your internet research at least 6 different designs in the boxes below. There should be evidence of 6 DIFFERENT ideas in these boxes. Look to the previous page for inspiration.

Teacher Approval: _____

Stock Breakout

Rough Dimensions:

Liners: 30 x 2-1/2 x ¾

Panels: 22 x 2-1/2 x ¾

Sides: 36 x 3-1/8 x ¾

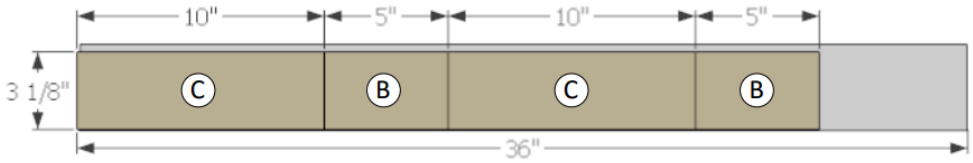
Can adjust length to make box bigger/smaller

FINAL DIMENSIONS Parts List

Part	Description	Quantity	Final Dimensions (LWT)	Material
A	Top/Bottom Panel	2	9-1/2 x 4-1/2 x 1/4	#2 or mix
B	Short Side	2	5 x 3-1/8 x ¾	#1 (Pine)
C	Long Side	2	10 x 3-1/8 x ¾	#1 (Pine)
D	Short Liner	2	4-1/4 x 2 x 3/16*	#2 (Hardwood)
E	Long Liner	2	8-7/8 x 2 x 3/16*	#2 (Hardwood)

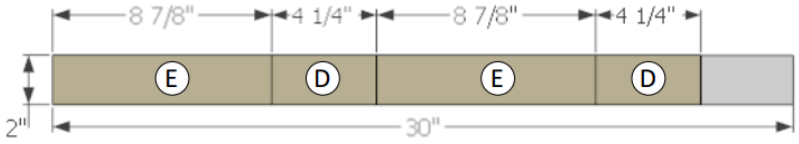
*Approximate dimensions, cut to fit

¾” Material 1



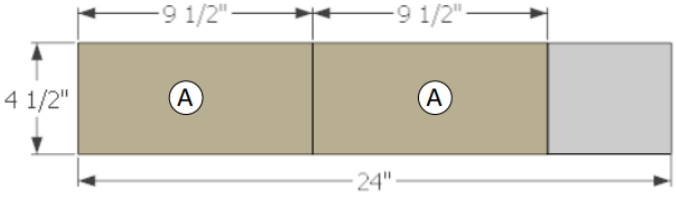
(side)

3/16” Material 2



(liner)

¼” Material 2

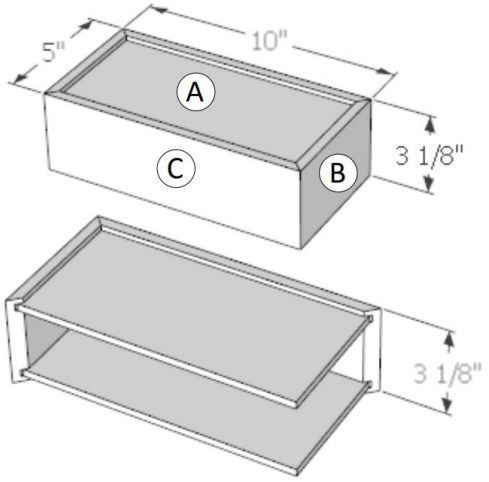


(Only need half the length as we will be cutting it in half lengthwise)

(panel)

Building Process

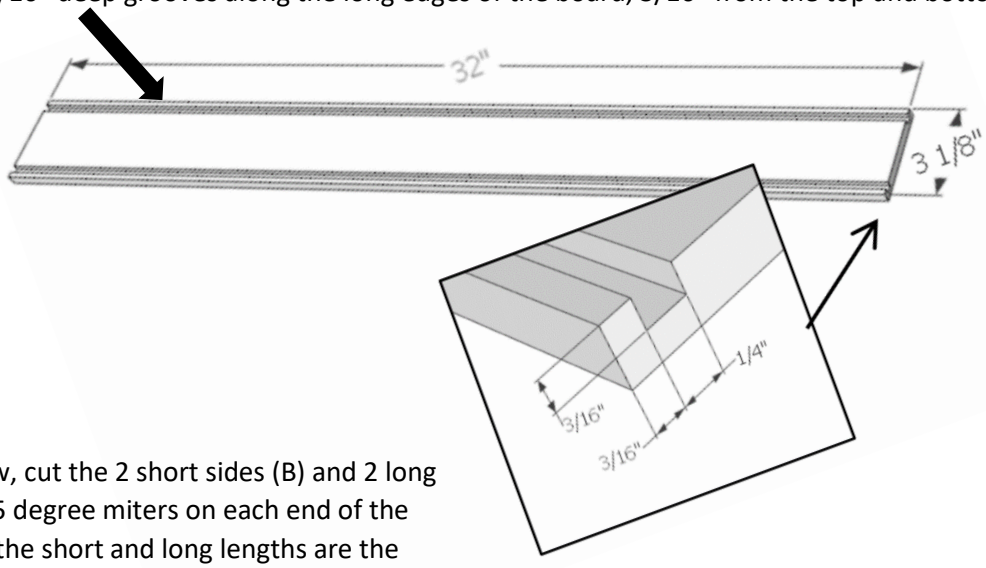
These are general instructions and may need to be adjusted based on your project customization.



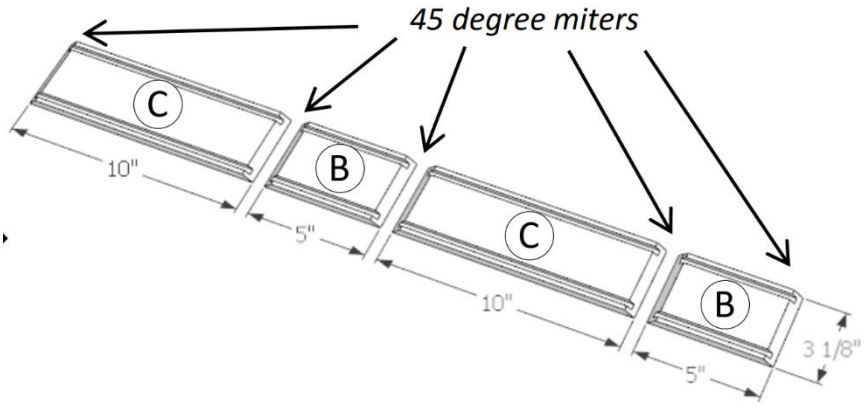
**sides removed for illustration*

SIDES

1. Cut the wood you will use for the 2 short sides (B) and 2 long sides (C) to width at 3-1/8". **DO NOT CUT IT SHORT, keep it as one long piece.** This is typically made from pine.
    a. Joint face side and mark it with the fish
    b. Joint face edge and mark it with the arrow
    c. Thickness plane to final thickness
    d. Tablesaw opposite face edge to desired width (this is the height of your box and you can adjust as you like).
2. Cut 1/4" wide 3/16" deep grooves along the long edges of the board, 3/16" from the top and bottom.



3. On the Tablesaw, cut the 2 short sides (B) and 2 long sides (C) with 45 degree miters on each end of the boards. Ensure the short and long lengths are the EXACT same size as each other with Ms. Meyer's technique.
    a. Cutting from the same board will also give a flowing grain line across the corners of the box.
    b. Feel free to adjust sizes to your desired lengths.

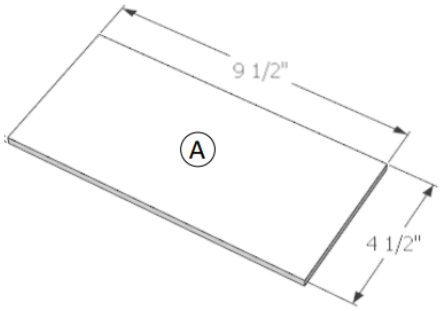


PANELS

4. On the Mitre saw, stock breakout hardwood to ROUGH length. You will be cutting this in half longwise, so you only need HALF of the actual total length of the panels. (i.e. only cut enough material for 1 panel, not 2)
    a. Keep in mind the minimum length for the tablesaw is 12inches.
    b. POSSIBLE EXTENSTION:
        Use various types of wood and glue them up to create a complex board.

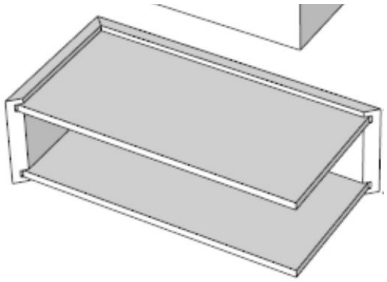
5. Joint Face side and mark.
6. Joint Face Edge and mark.

7. Rip to rough widths on tablesaw. This size will be the overall height of your box.



8. On the bandsaw, resaw the material to half its thickness using the fence.

9. Use the thickness planer/sander to achieve final thickness. Ensure your panels fit PERFECTLY in the groove of your sides. This should be about ¼". Do not over sand.

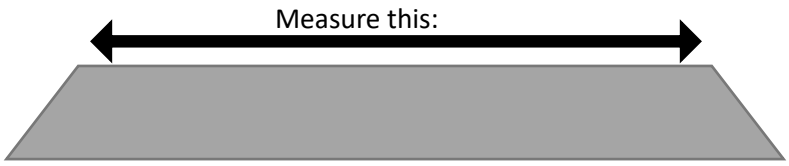


10. Write your name on your panels.

SIZING PIECES

11. Using your SHORT side piece, measure the length of your groove on the INSIDE (smaller side) of the mitre. Add 1/8th inches to this measurement. Rip the panels to the final calculated width (tablesaw).

12. Cut 1 end square (BEST END).



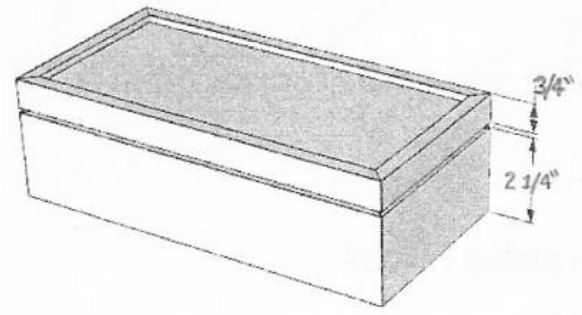
13. Using your LONG side piece, measure the length of your groove on the INSIDE (smaller side) of the mitre. Add 1/8th inches to this measurement. Cut the panels to the final calculated length (mitresaw).

14. Sand everything to 150 grit.

15. If wood burning, do so now.

16. Assemble the box by installing the top and bottom panels in the grooves. Do a DRY CLAMP.

17. Glue the mitered corners. DO NOT glue in the grooves. Refer to Ms. Meyer's demo on how to do this effectively. Wait 24 hours.



18. Fill Gaps with glue/sanding technique.

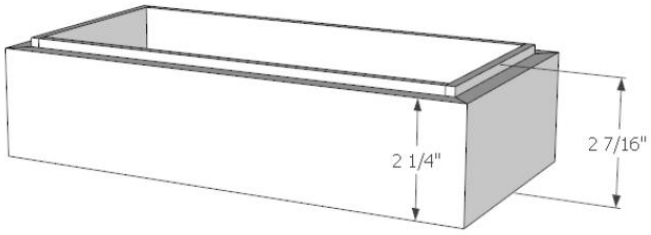
19. Cut the lid using the resaw technique with Ms. Meyer's permission. The lid width will be ¾".

20. Flatten the lid and body joint
    a. This can be done using sanding boards or thickness sander.

LINERS

21. Measure the inside of your box to determine the width and length of your liners and how much material you will need. See if there is any leftover hardwood that you can use first. DO NOT CUT individual pieces yet. The minimum length for our thickness sander is 6".

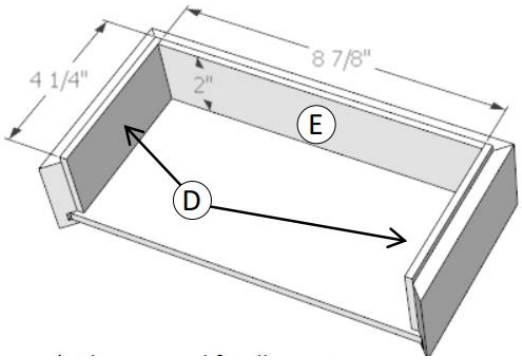
    a. The liner should be at least 3/16th above the top of your box.



22. Resaw your material to 1/8th" thick.

23. Thickness sand to 3/16".

24. Cut 2 short liners (D) and 2 long liners (E) to length.
    a. Use the box to fit the liners vs. going exactly off the dimensions. Fit the short liners to the sides FIRST then the long liners between the short liners.



25. Sand liners to 220 grit

26. Glue the liners in place with wood glue and small clamps. This will create a 3/16" lip for the lid to fit onto.

FINISHING

27. Sand all parts to 220 grit. Lightly sand any areas on the top or liner if needed for a smooth fit.

28. Finish as desired. Recommendation is polyurethane finish (2 Coats).

Friction Fit Box Assessment

Marks Breakdown:

Pre-build Process:

Were your sketches complete? Were they completed with quality? Did you put time/effort into completing them?

Self-Assessment: /10	Ms. Meyer's Mark: /10

Building Process:

Were you on task throughout the building stage? Did your instructor need to bug you to get to work? Did you show up on time? Were you following proper safety guidelines?

Self-Assessment: /10	Ms. Meyer's Mark: /10

Project Assessment:

Design Creativity How original is your box? Did you wood burn? Did you add a customization?	**Self-Assessment: /10**	**Ms. Meyer's Mark: /10**
Machine Accuracy Based on specifications, how accurate is your box to dimensions?	**Self-Assessment: /10**	**Ms. Meyer's Mark: /10**
Sanding Is your box sanded nicely to 220 grit? Is there evidence of pencil, scratches, or machine marks?	**Self-Assessment: /10**	**Ms. Meyer's Mark: /10**
Fit of Lid Do I have to force the lid on? Is the lid really loose?	**Self-Assessment: /10**	**Ms. Meyer's Mark: /10**
Finish Was the finish applied with a nice even coat? Are there signs of dry patches from under-finishing or sticky spots from over-finishing?	**Self-Assessment: /10**	**Ms. Meyer's Mark: /10**

If you were to build this project again, what would you do differently? _____

_____

_____

Did you enjoy this project? Explain. _____

_____

_____