

# Project 18618EZ: Box of Shapes Toy



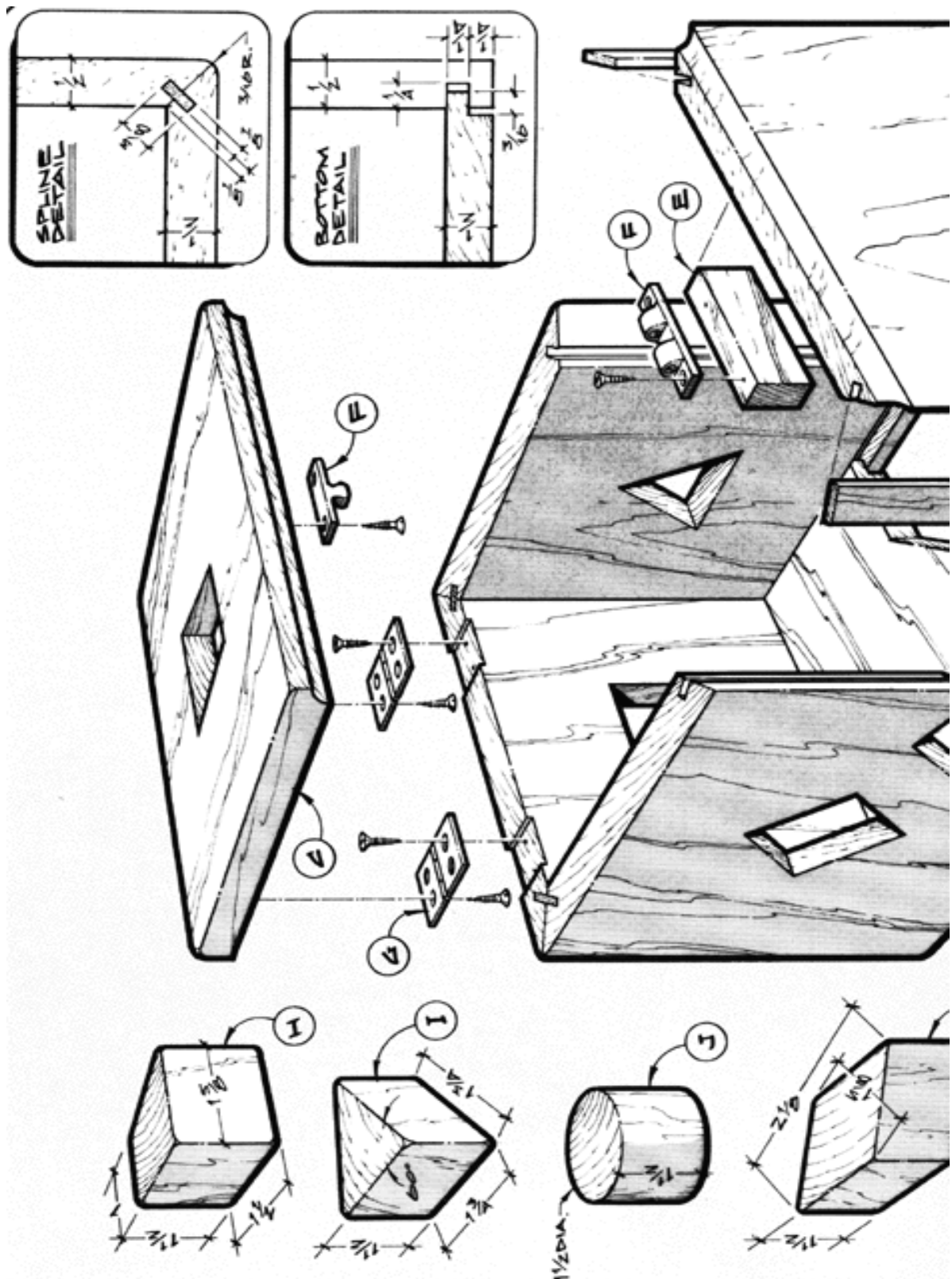
*The ability to recognize shapes is an important art of a child's development. This easy-to-make toy will help kids to learn several of the basic shapes — and have some fun while they learn. Five different profiles are cut into the box, one in each of the four sides and one in the top. The child is challenged to get the blocks in the box, and that can only be done if the shape of the block matches the cutout. A double ball catch keeps the hinged top shut until the youngster opens it to remove the blocks.*

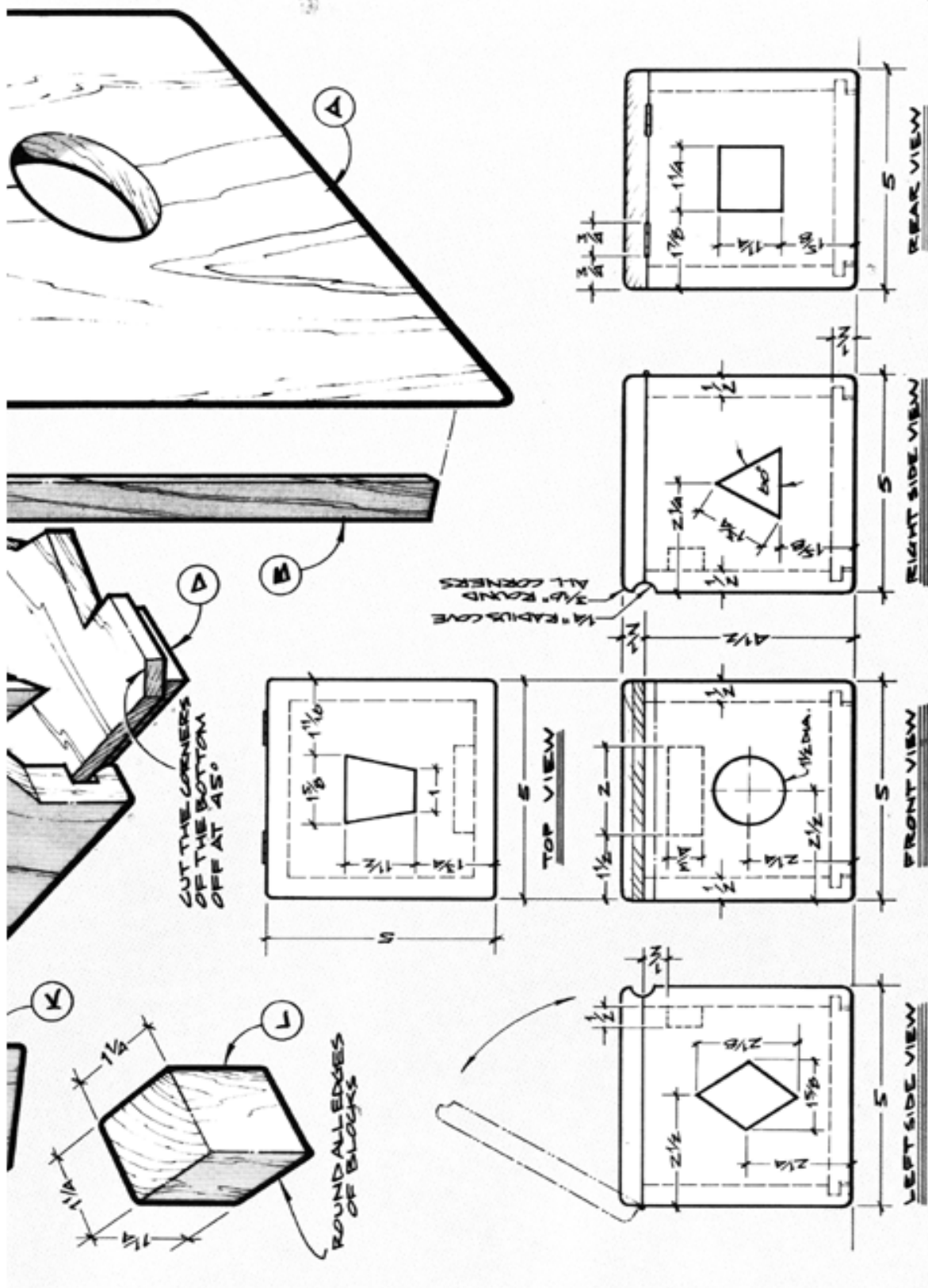
*Ours is made from poplar, a wood that is relatively light, yet durable. Maple, which has excellent durability, is also a good choice. A piece of stock measuring 1/2" thick x 5-1/2" wide by 20" long will provide enough stock for the four sides (A), while a piece that's 1/2" thick x 5-1/2" wide x 11" long will suffice for the top (C) and bottom (D). The width and length dimensions allow extra stock.*

## Box of Shapes Toy Materials List

Part	Description	Size	No. Req'd
A	Side	1/2" x 5" x 4-1/2"	4
B	Spline	1/8" x 3/8" x 4-1/2"	4
C	Top	1/2" x 5" x 5"	1
D	Bottom	1/2" x 4-3/8" x 4-3/8"	1
E	Catch Block	1/2" x 3/4" x 2"	1
F	Double Ball Catch	5/16" x 1-11/16"	1
G	Hinge	3/4" x 1"	2
H	Trapezoid Block	See detail.	1
I	Triangle Block	See detail.	1
J	Circle Block	See detail.	1
K	Diamond Block	See detail.	1
L	Square Block	See detail.	1

# Box of Shapes Toy Complete Schematic





# Box of Shapes Toy Step-by-Step Instructions

1. Cut the four sides (A) from the 20" long board.
2. Plane to correct thickness.
3. Set the table saw blade to 45 degrees.
4. Raise it to a height of about 3/4".
5. Set the rip fence to cut the miter along one edge of the 20" length. **NOTE: When setting the fence, keep in mind that it should be located so that, after the miter is cut, the stock width is not less than 5".**
6. Make just one miter cut.
7. Readjust the rip fence to establish the final stock width of 5".
8. Cut the second miter.
9. Lower the saw blade (which should still be set at 45 degrees).
10. Relocate the rip fence.
11. Use scrap stock to check the accuracy of your set-up. **NOTE: Most saw blades make a 1/8" wide cut; however, if your blade makes a slightly wider or narrower cut, simply adjust the spline (B) thickness as needed.**
12. Cut the spline groove. **NOTE: Cut the splines a little on the long side so that after the glue dries, they can be trimmed flush with the ends of the sides.**
13. Crosscut the stock into four pieces, each piece measuring 4-1/2" long.
14. Cut the dado groove along the bottom edge of each side (see bottom detail).
15. Set up the table saw with a 1/4" dado head cutter set to a depth of 1/4".
16. Locate the rip fence 1/4" from the nearest tooth.
17. Hold the stock firmly against the rip fence as you use a push stick to move it over the cutter, being sure to keep your hands a safe distance from the blade.
18. Use a push stick to keep hands a safe distance from the blade.
19. Cut the bottom to 4-3/8" square. **NOTE: The 1/2" x 5-1/2" x 11" board that was made earlier will serve as stock for the top and bottom.**
20. Cut the 1/4" x 1/4" rabbet all around.
21. Make the top so that it is 5" square.
22. Use a router table and a 1/4" cove bit to cut the 1/4" radius cove on the front edge.
23. Lay out and mark the five shapes on the four sides and the top.
24. Use a sharp chisel to cut out each one except the circle.
25. Use a Forstner bit or hole saw to make the circle.

26. Assemble the sides and the bottom with glue, then clamp firmly.
27. Use the router table and 1/4" cove bit once again to add a cove, this time along the top edge of the front.
28. Attach the top to the box with a pair of hinges (G).
29. Add the catch block (E) and the double ball catch (F) to complete the work on the box.
30. Make the five blocks (H, I, J, K, and L) as shown.
31. Make the circle block (J) so it can be turned to the 1-1/2" diameter.
32. Sand each part, taking care to round over all sharp edges and corners to a generous (about 3/16") radius.
33. Leave unfinished.

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