

Explain what an Icoshedron is

20 equilateral triangles with angled sides when assembled to form a sphere



Decide the size

Sides of one piece are 1 1/2" makes a 3" sphere

Bigger is harder to make and requires thicker wood

Smaller spheres are harder to turn

Considerations before cutting wood

Thickness of the wood determines thickness of jig

So MDF is 3/4" and a good choice for the 20 pcs

A 24" X 1 1/2" X 3/4" will make one three inch sphere

How to make the pieces

Make MDF boards 1 1/2" W X 3/4" T and 24" or longer

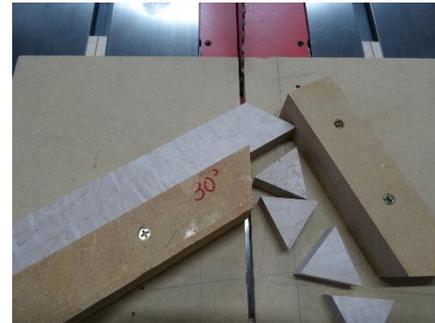
Make a jig to cut 30-degree angles

This is my inexpensive unlimited adjustable jig

Cut 3 pieces and test, cut 3 more pieces, show how

Put 6 pcs together with rubber band, show gaps

When you are exactly done cut 16 more pieces, 2 spares



Make the angle cutting jig before changing table saw 30 degree settings

Cut MDF 4" X 12" and 1 1/2" X 12" piece

Cut the 1 1/2" piece in half

Mark 7/8" from one side, cut the corner using your 30-degree jig

Mount the 2 pieces 2 1/4" on base using a straight edge

Screw the pieces to the base. The edge will be cut as you go.

Mount the hold down clamp, center over triangle

Ready to cut angles

Set your table saw to approximately 20.905 degrees

Take 1 pcs and mount to jig. Cut jig to edge of 1st pcs

Cut 4 more pieces on side 1

Cut 1 piece on side 2, There is a flat spot.

Move the fence a smidgen to remove the flat edge

Cut 4 more side 2 pieces

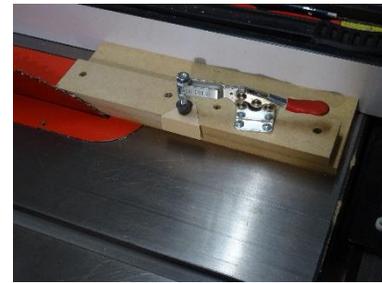
Cut 5 more side 3 pieces moving the fence a smidgen as before

This leaves all sides the same length



Test the 5 pieces

Use tape to put 5 pieces together. Check top and bottom
If the gap is on the bottom tip the blade more
If the gap is on the top tip the blade less



Cut 21 more pieces, 1 spare

Sand all glue edges with a sanding block, 220 no nubs
The center 10 and both 5 pcs make the sphere

Glue up

Tape 2 12" pieces of tape to the table 1/2" apart.
Lay a straight edge halfway across one piece of tape.
Put 10 pieces against the straight edge lining up the grain.
On the 5 pieces don't forget to line up the grain
Place the 5 pcs back to back with the 10-pc row
Use a razor blade cutter to remove the tape between the 5 pieces

Ready to glue, this is a messy job

Put glue on all three sides of all pieces
After squeezing glue on all pcs use a brush to get glue on every side
Begin rolling up the sphere
When it is rolled up put some rubber bands on three sides.
Use a damp rag to remove some of the glue to see the tips and edges
Remove the tape
Start putting clamps on, center row, then all sides
Do not over tighten
Adjust clamps to squeeze sphere until all pieces are closed together

How to turn sphere

Grind off a little of each tip, they're really sharp
Make a glue block and pencil lines at 1 1/2" and 2"
Glue the sphere to the glue block, use the tail stock and jam chuck
Turn 2/3 of the sphere to form a ball.
Mark the center point on the turned end.
Mark the center line, this is left on until the final turning is complete
Measure the end to center and mark where you will cut off the sphere
Cut off the sphere and finish with the Craig Timmerman method

<https://www.youtube.com/watch?v=0vXYqKvfYlQ>

I highly recommend you watch the Craig Timmerman video. Click the above link

Craig Timmerman Method

Make a jig to hold the sphere

Mount a 3" x 3" X 5" and turn a tenon for mounting with a chuck

Turn the outside to slope to the size of your sphere

Turn the inside more than the diameter of your sphere

The edge should be about ¼" from the center line on your sphere

Make sure the center line is level with the jig!

Mount your sphere and put masking tape on the jig and sphere

Turn the rough end to a ball and mark the center with a pencil

Turn the sphere 90 degrees

Use the tail stock jam chuck very lightly

Align the two center marks, the sphere is not round yet

Turn a line on the sphere between the two center points

Use your cutoff tool to make a groove in the sphere at that line

If you want a sphere of a specific diameter cut the groove to that diameter

Turn the sphere back to the original position

Use tape

Turn the end until it meets the groove you just cut

You have a perfect ½ sphere

Turn the sphere too the finished side in your jig

You may have to adjust the jig to fit the new size

Turn the second side to the bottom of the groove

Your original line should be the last thing you remove

You now have a perfect icosahedron sphere