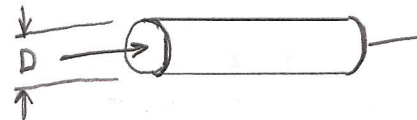
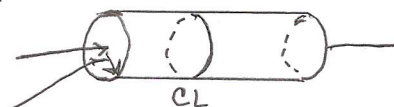


STEPS TO TURNING A SPHERE USING THE 42% Rule

1. Turn cylinder to desired diameter (measure diameter D)

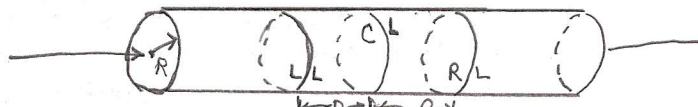


2. Mark centerline (CL) of sphere.

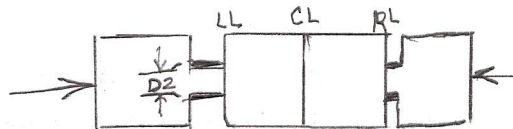


3. Determine 1/2 the diameter, which equals the radius (R).

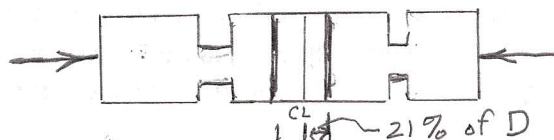
4. Mark edge boundaries of sphere to right (RL) and left (LL) of CL. (Distance R from CL)



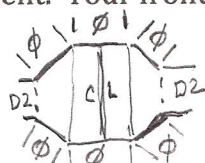
5. Use Parting Tool to 'partially' part cylinder, with parting groove immediately to the left of LL and to the right of RL (The Safe Side). The diameter D2 equals 42% of D (The sphere diameter).



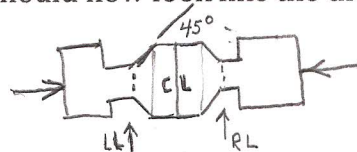
6. Mark vertical circles to the left and right of the centerline (CL) by a distance equal to 21% of D.



7. Cut away the wood from these last 2 marked circles on the cylinder to the inside edge of the parting cuts made in Step 5. (These cuts should be made at 45 degrees to the long axis if you choose to check your angles.) The 3 vertical circle lines should still be evident. Your frontal view (and top view) should now look like the drawing below.

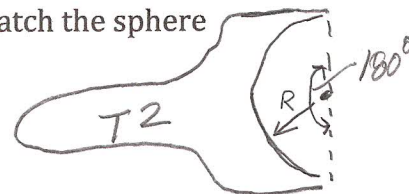
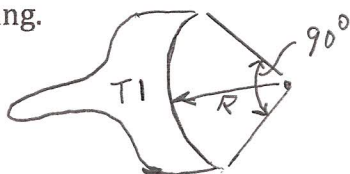


$$\phi = D2 = 42\% \text{ of } D$$

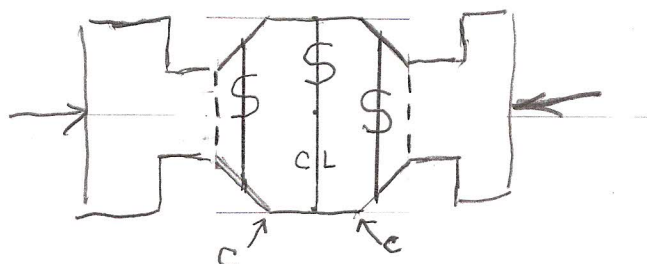


8. Next few steps may vary depending upon how you 'chuck' the sphere for final rounding.

9. Make a template or two with the desired diameter (radius) to match the sphere you are making.

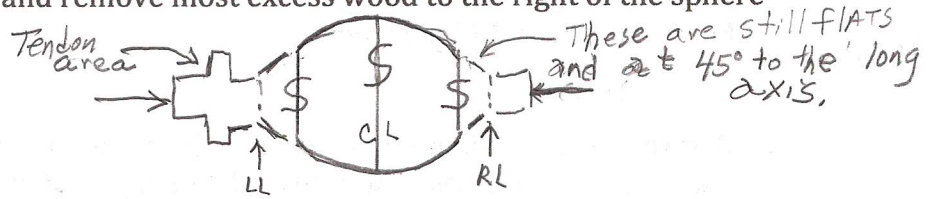


10. Mark the midlines of the right and left slopes with pencil (That midline is 21% of D from the previous corners (C)). The three lines marked below with the letter S are now special (Sacred) when one starts to round the corners (C). DO NOT REMOVE THE LINES MARKED BY (S).



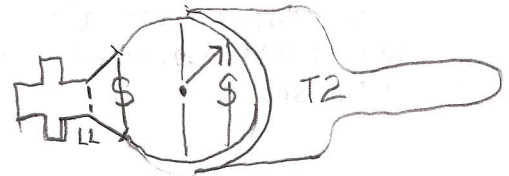
This octagon is the outer boundaries of your sphere!

11. Round the corners C to match your T1 template. I'd also cut a tendon into the left portion of the cylinder and remove most excess wood to the right of the sphere area.



12. Place above object in chuck (assuming mass is such that it is properly supported). Part off right end of above object to the right of dotted line and perpendicular to the long axis. Mark center point on the right end.

13. Round off right end to match your T2 template.



14. Part off tendon <sup>area</sup> to the left of left dotted line. Mark center point of left end.

15. Place right rounded end of sphere into a "jam chuck" or "vacuum chuck". Then remove wood in tendon area to match T2 template.

16. Refine your sphere as needed by rotating its position in the chuck.

17. Admire your sphere!!! Happy Turning. Corwin Jones Jan. 2010

