

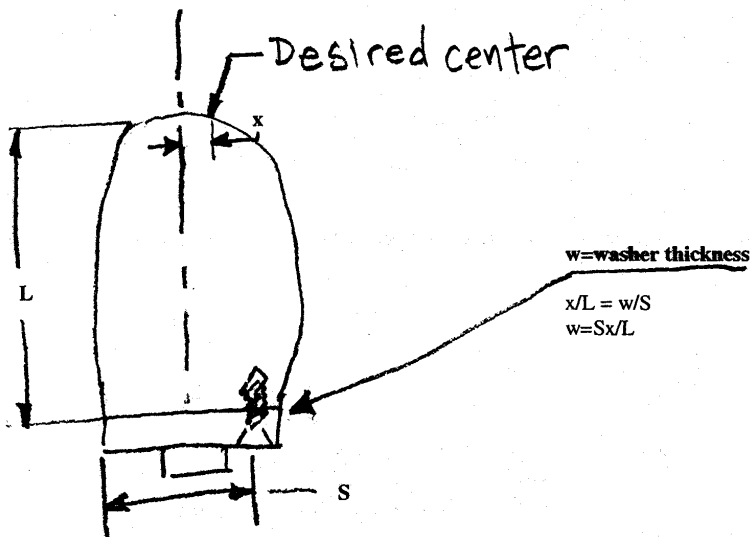
Geometric construction tips when working with three dimensional objects:

If you already know the approximate axis, turn the odd shaped piece of wood between centers to create the face plate mounting surface.

If you only know the approximate mounting surface: create (with saws and planes) the base plate surface, set wood on paper on a flat table, drop plumb bobs down to the paper from key features, use previous construction methods to find the center.

Once you have found the center on the paper, use framing squares using line of sight to estimate center from different directions on the 3 dimensional object.

After the piece is mounted, if the desired axis is off-center, move the faceplate sideways if necessary. If the faceplate is in the right location, but the tailstock is not, use similar triangles to tilt the faceplate:



Example:

$x = 1''$

$L = 15''$

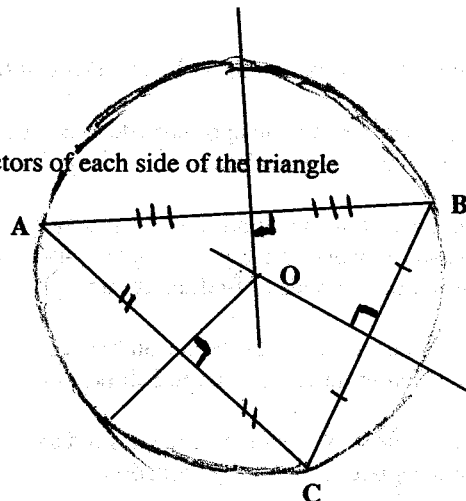
$S = 5''$

$w = 1 \times 5 / 15 = 1/3''$

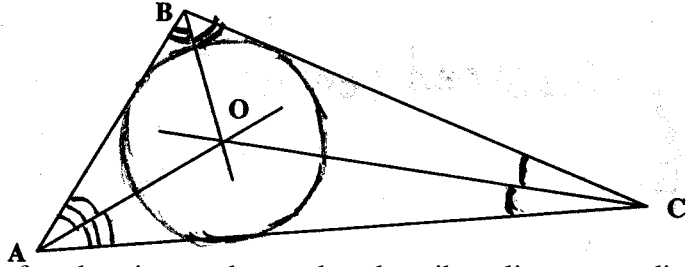
Three points define a plane, but also many other things:

Three points can be used to define two different circles:

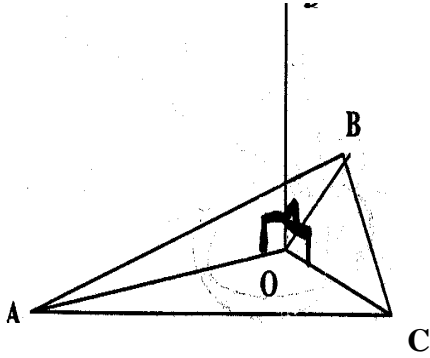
Circumscribed about a Triangle – Draw Perpendicular Bisectors of each side of the triangle



Inscribed in a Triangle- Bisect each angle of the triangle



A fourth point can be used to describe a line perpendicular to that plane (Axis of Rotation)



Three planes define a cone: Bisect the three angles, as above, but create planes, which intersect to define the Axis of Rotation

