

Math Trades 1

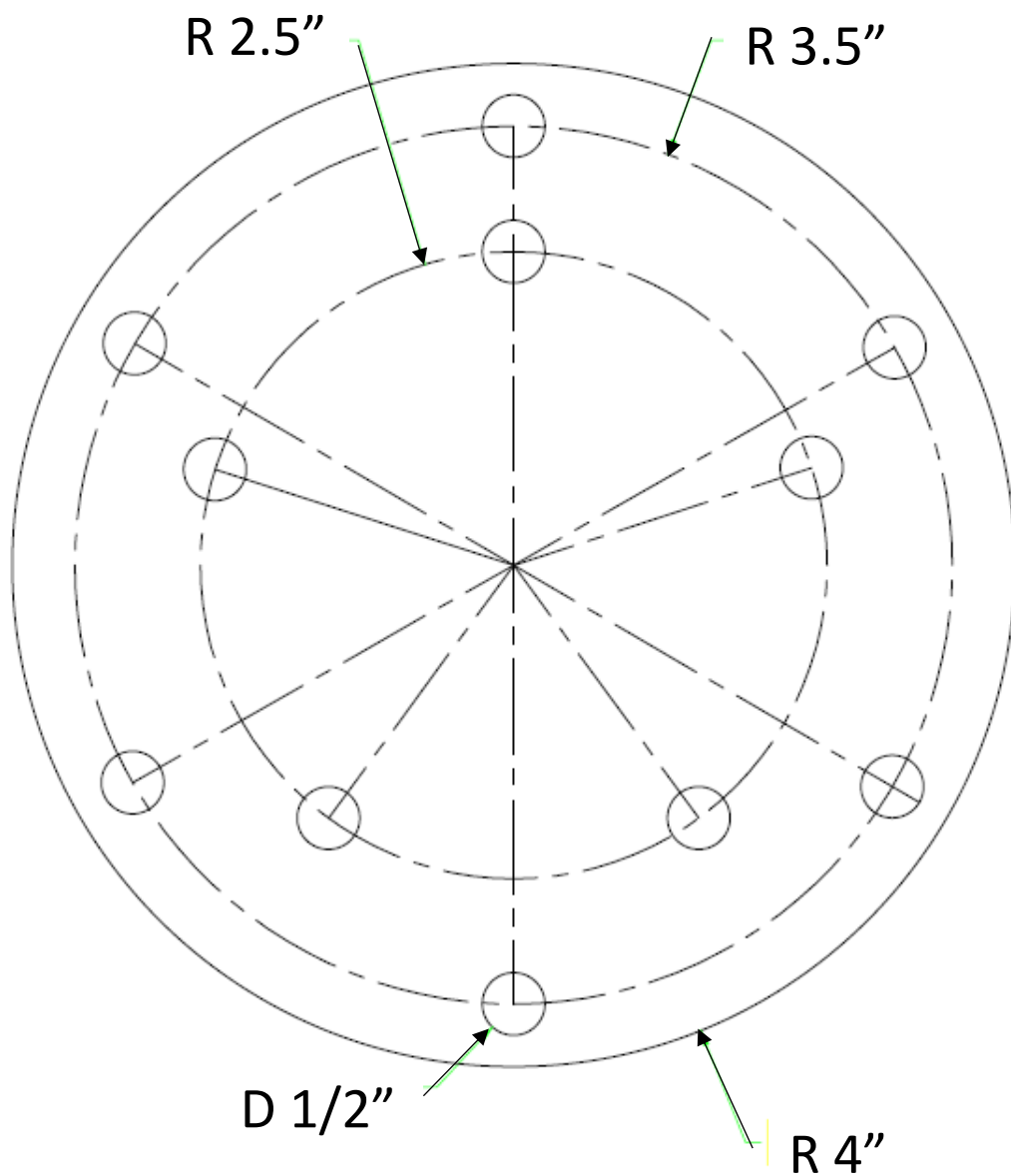
Activity #9 – Trigonometry Bolt Hole Circle



Name _____

In this activity, we will lay out a bolt hole circle on paper to match the metal one shown by your instructor. We will use trigonometry to determine the correct distance between the centers of two consecutive holes. Use the blueprint on the back of this page as a reference.

1. On a separate piece of paper, using the compass and combination square to measure the radius, draw a circle with a radius of 4".
2. Also lightly draw circles with a radius of 3.5" and one with a radius of 2.5".
3. Draw a vertical line straight up from the center of the circle.
4. Draw circles with .5" diameters where the vertical line intersects the 3.5" radius circle and the 2.5" radius circle.
5. Now, to determine where the next circles will be around the 3.5" radius circle, determine the distance between two consecutive holes using trigonometry. Use the blueprint to determine the number of holes.
6. Using the distance between two circles in number 5, mark the centers of the remaining holes using the combination square and then by sketching little arcs with the compass. What method do seem to be more accurate?
7. Draw .5" diameter circles around each of the centers found.
8. Repeat steps 5-7 for the 2.5" radius circle.
9. Carefully, cut out the circles if time allows. Hold the paper version of your bolt hole circle up to the metal version to verify your calculations and measurements.



Rev. 2	NWTC Metal Fab I	
Drawn By: Wayne Haines	Bolt Circle	
Checked By:		
Scale:		
Date: 3/13/2016	Drawing Number: MF 2016	1 of 2

This material is based on work supported by the National Science Foundation under Grant No. DUE-1406857. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.