Name $\qquad$

In this activity we will create a replica tank reducer using paper to match the metal one as shown by your instructor. Use the outer dimensions of the tank reducer. Steps 1-5 are calculations needed to create the tank reducer, which you will do in steps 6-11.

1. Determine the radius of the upper and lower part of the tank reducer.
2. Determine the circumference of the upper and lower part of the tank reducer.
3. Determine angle $A$ to the nearest tenth of a degree.
4. Determine the hypotenuse of the triangle formed to determine angle A.
5. On the blueprint, extend the hypotenuse so that it would intersect with the vertical center line. Determine the full hypotenuse of the extended line from angle A to where it meets with the centerline. Determine the hypotenuse of just the upper triangle.
6. On a full piece of paper, starting at a point on the left side in the middle of the paper, draw a straight line the length of the extended, longer hypotenuse down to the bottom of the page (found in number 5). Place the end of compass at the top endpoint of the line. Extend the compass to the other endpoint of the line and sketch an arc past ninety degrees.
7. Use the pee wee tape, measure half of the lower circumference (found in number 2) on the arc, starting at the bottom of the straight line and mark a point. Connect this point on the arc to the upper endpoint of the straight line with a straight edge. (It may help to have two people working together on this step, one person holding the end of the tape and one marking the endpoint.)
8. Use your compass to sketch a second arc, starting at the upper endpoint of the straight line again and having the other end of the compass at a distance of the hypotenuse of the upper triangle (found in number 5 - this is the top part that we do not want).
9. Using the pee wee tape, verify that where the arc intersects the two straight lines is half of the upper circumference (found in number 2).
10. Repeat steps 6-9.
11. Cut each of the sketched sectors and tape them together, creating a replica of the tank reducer. Wrap tape over the top and bottom edges to make the shape more circular.
12. Verify your upper and lower radius and height on the original blueprint by measuring your replica using your combination square. Verify angle A using your angle finder. If the measurements are correct, slide your paper replica on top of the steel tank reducer to verify further. (It may be a bit hard to use the angle finder to verify with the paper replica - you can verify with the steel replica instead.)

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