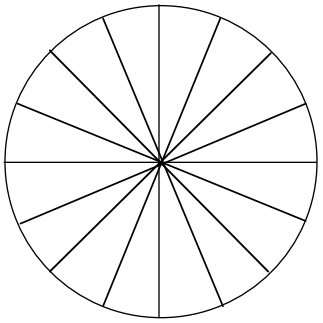
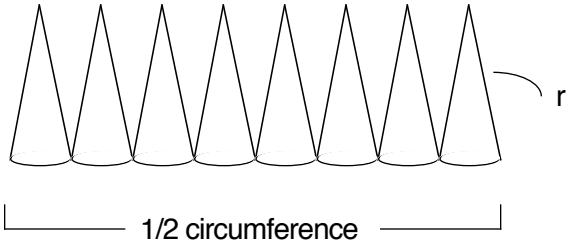
Here is a way to visualize where the formula for the area of a circle comes from.

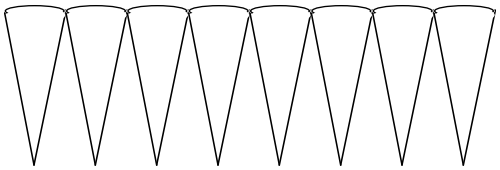
Try to visualize each step as it is described. You may actually draw and cut a circle if you wish.

A. Imagine a circle with many diameters drawn through it.

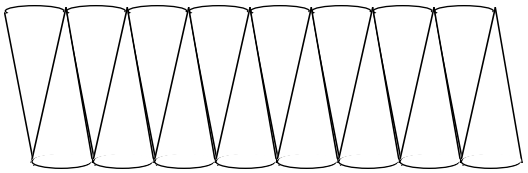


B. Divide the circle in half and separate the sections.





C. Fit the two sections together. You can imagine each section to be very small, so that the figure is a rectangle. The width of the rectangle is the same as the radius of the circle, or r. The length of the rectangle is one half of the circumference or 1/2C.



D. We know the circumference of a circle is twice times the radius, or 2 r.

So, the length of the rectangle may be written as 1/2(2 r) = r

1) Multiply the length times the width of the rectangle to find its area, which is the same as the area of the circle. What is your result?

Read and solve.

2) If L = length, W = width and H = height, the formula for the volume of a rectangular solid can be written as V = LWH. Write a formula for the surface area of a rectangular solid using L, W, and H. Simplify your formula.

3) In a cube, length, width and height all have the same measure. Using S to represent that measure, adapt your formula from #2 to a formula for the surface area of a cube.

4) Greg built a rectangular metal storage bin. Its base was 3' by 11' and its height was 3'. Find the volume and the surface area of the bin.

5) Greg used the same number of square feet of metal (#4) to build a cube-shaped bin. What were the dimensions of the new bin?

6) Which bin will hold the greater volume? What is the difference in their volumes?