**Area of a Circle**

Suppose a circle was cut into equal sections and then arranged to approximate a parallelogram. The more congruent sectors we use, the closer the area of the parallelogram is to the area of the circle, and the more the shape looks like a rectangle.

The sum of the two longer sides is equal to the circumference, C. So each longer side, or the base of the rectangle, is one-half the circumference of the circle, or $\frac{C}{2}$.



But $C=2πr$

So, the base of the rectangle = $\frac{2πr}{2}$

 = $πr$

Each of the two shorter sides is equal to the radius, *r*.



The area of the rectangle, which is made up of all the sectors of the circle, is: base x height.

The base is $πr$ and the height is *r*. So the area of the rectangle is: $πr$ x *r* = $πr$2.

Since the rectangle is made from all sectors of the circle, the rectangle and the circle have the same area.

Area of Circle:

**A =** $πr$**2**