Notes from Lesson 7: Arc Length of Sector

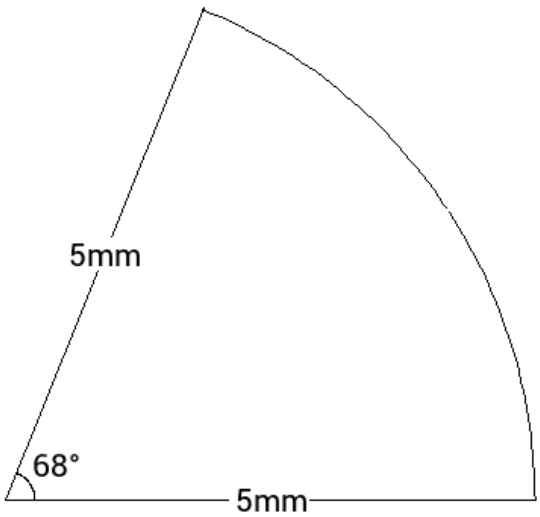
The arc length is how long the curvy bit of the sector is. This is again, just like last time, a fraction of the circle.

The formula for the circumference of a circle is $2\pi r$
Therefore, the length of just the part that we are after is

$$\text{Arc Length} = 2\pi r \times \frac{\theta}{360}$$

where θ is the angle we have.

Let's look at an example.



Arc Length = $2\pi r \times \frac{\theta}{360} = 2 \times \pi \times 5 \times \frac{68}{360} = 5.93\text{mm (3sf)}$

Therefore, if we want to know the perimeter, we just add on the extra 5 on each of the other two sides so 5 + 5 + 5.93 = 15.93mm

Again, if we look at radians, we swap out the 360 in the formula with 2π. This makes the formula:

$$\text{Arc Length} = 2\pi r \times \frac{\theta}{2\pi} = r\theta$$

This is because the two 2π just cancel each other out.

For our example above, the angle would be 1.186 radians.

This would mean the arc length would be $5 \times 1.186 = 5.93\text{mm (3sf)}$