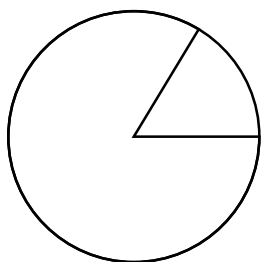


## Notes from Lesson 6: Area of Sector

A sector is a cut of from a circle that looks like a piece of cake:

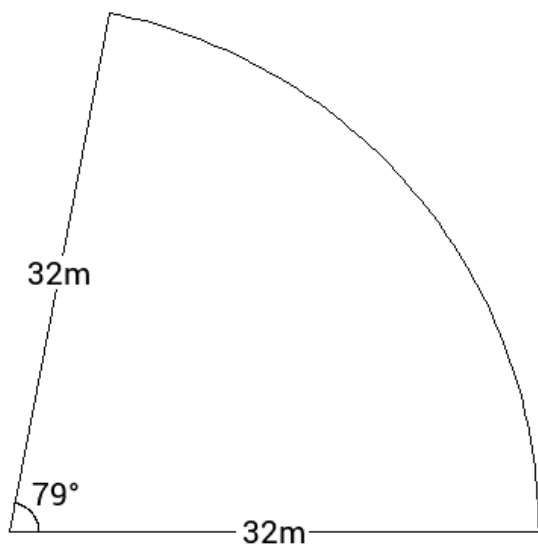


Now, we know the area of a circle is  $\pi r^2$ ... therefore, the area of the part of the circle we are trying to find out is just whatever fraction of the area that the sector is a fraction of the circle.

So the area formula becomes

$$\text{area} = \pi r^2 \times \frac{\theta}{360}$$

Because there are  $360^\circ$  in a circle and  $\theta$  is the size of the angle.



Therefore the area is going to be  $\pi \times 32^2 \times \frac{79}{360} = 706\text{m}^2$  (3sf)

We could also work out the area using radians. There are  $2\pi$  radians in a circle... so to convert from degrees to radians you  $\div 360 \times 2\pi$  and to go the other way you  $\times 360 \div 2\pi$

This would mean the angle would be 1.379 radians.

When using radians the formula becomes

$$\text{area} = \pi r^2 \times \frac{\theta}{2\pi} = r^2 \times \frac{\theta}{2}$$

Therefore the area of our sector is

$$\text{area} = 32^2 \times \frac{1.379}{2} = 706\text{m}^2 \text{ (3sf)}$$