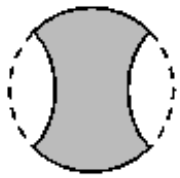
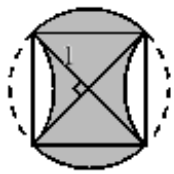
18. The circumference of a circle with radius 1 is divided into four equal arcs. Two of the arcs are 'turned over' as shown.
What is the area of the shaded region?



A 1 B $\sqrt{2}$ C $\frac{1}{2}\pi$ D $\sqrt{3}$ E 2

---

18. **E** The four arcs are of equal length and their end-points lie on a circle, so the four end-points can be joined to make a square. As two of the arcs are 'turned over', the two unshaded regions inside the square have areas equal to the two shaded regions outside the square.



The total shaded area is therefore equal to the area of the square. The radius of the circle is given as 1 so, by Pythagoras' Theorem, the side-length of the square is $\sqrt{1^2 + 1^2} = \sqrt{2}$. So the area of the shaded region is $\sqrt{2} \times \sqrt{2} = 2$.