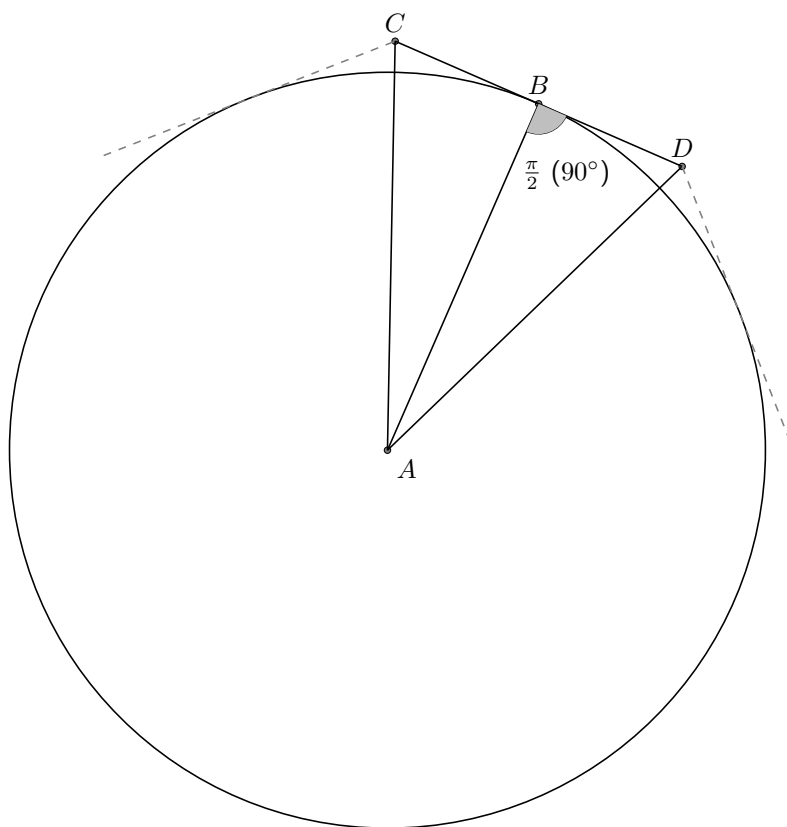




The figure above represents a n -sided regular polygon inscribed by a circle of radius $r = AB$. Note that only one side is depicted here since n can be an arbitrary natural number. Also, $\angle ABD = \pi/2$ or 90° . If we define the side length to be $s = CD$, then do the following

1. Find the perimeter of the n -polygon, p , in terms of s and n .
2. Prove that the area of the n -sided polygon is

$$\frac{pr}{2}.$$

Hint : First find the area of $\triangle ABD$

The formula $\frac{pr}{2}$ for an area of an n -sided polygon is useful to know for many problems, please keep it in your toolbox!