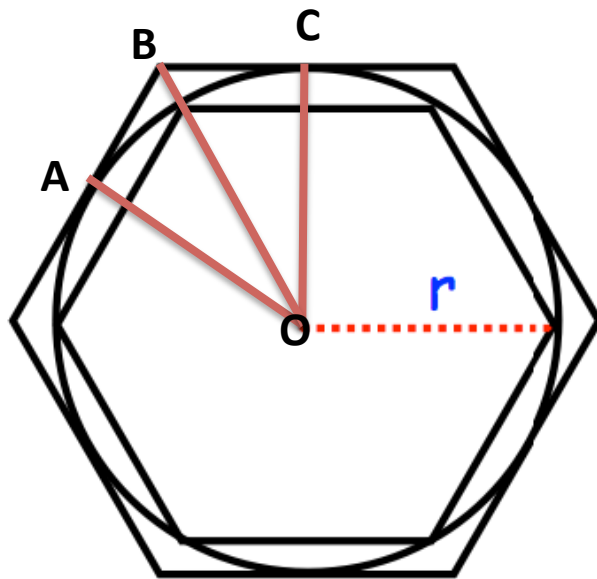


May 3rd



To find perimeters, we need to find side length for the 2 hexagons

For the inscribed hexagon, the side length = r

(since the hexagon is made from 6 congruent equilateral triangles)

For the circumscribed hexagon

Angle AOC = 60° , therefore AOB = 30°

Using triangle OBC

$$BC = r \tan 30 = \frac{r\sqrt{3}}{3}$$

$$\text{Hence side length} = \frac{2r\sqrt{3}}{3}$$

$$\text{Circle Circumference} = 2\pi r = \mathbf{6.2831r}$$

$$\text{Inscribed hexagon perimeter} = \mathbf{6r}$$

$$\text{Circumscribed hexagon perimeter} = 6 \times \frac{2r\sqrt{3}}{3} = \mathbf{6.928r}$$

Therefore the **inscribed hexagon** has perimeter closest to the circumference of the circle.