

Activity #3: Calculate some approximations of π ?

Using a process like the one Archimedes used, let's get some approximations for π . We will try to increase the number of sides of a polygon that is inscribed in a circle and measure its perimeter, diagonal, and the ratio of these two numbers.

Beginning with an inscribed square, let's do some calculations.

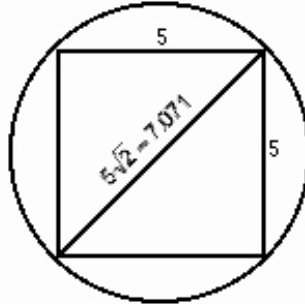
$$5^2 + 5^2 = \text{diameter}^2$$

$$25 + 25 = \text{diameter}^2$$

$$50 = \text{diameter}^2$$

$$\sqrt{50} = \text{diameter}$$

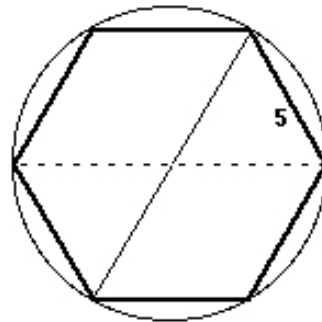
$$7.071 \approx \text{diameter}$$



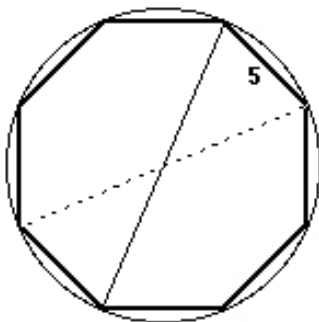
1. Would you imagine that the perimeter divided by the diagonal value of this inscribed square is smaller or larger than the circumference divided by the diameter of the circle that surrounds it?

2. In the regular hexagon at the right,

- Calculate its perimeter.
- Find the measurement of its diagonal.
- Find the ratio of perimeter/diagonal.



3. How much can you calculate for the dimensions and ratio of this octagon?



- Perimeter
- Diagonal

- Ratio: