

$$r = 3$$

$$P = \frac{\text{Area of circle}}{\text{Area of square}} = \frac{\pi r^2}{(2r)^2} \Rightarrow \frac{\pi r^2}{4r^2} = 0.7853$$

using our data we found

$$P = 0.80$$

$$(2r)^2 = (6)^2 = 36$$

~~estimate area~~

$$\text{Area of circle} \approx \text{Area of square} \times P$$

$$\approx (2r)^2 \times P = 36 \times 0.8 = 28.8$$

$$3.14 \times 9 \Rightarrow 28.26$$

$$28.26 \text{ vs } 28.8$$

$$r = 3$$

$$P = \frac{\frac{4}{3} \pi r^3}{(2r)^3} \Rightarrow \frac{\frac{4}{3} \pi r^3}{8r^3} \Rightarrow \frac{4\pi}{24}$$

~~estimate area~~

our $P = 0.8$

Area of sphere \Rightarrow

$$0.8 \times (2r)^3 = 0.8 (8(3)^3)$$

$$\Rightarrow 0.8 (8(27)) \Rightarrow 172.8$$

$$\frac{4}{3} \pi r^3 \Rightarrow \frac{4}{3} (3.14)(27) = 113.04$$

$$172.8 \text{ vs } 113.04$$