

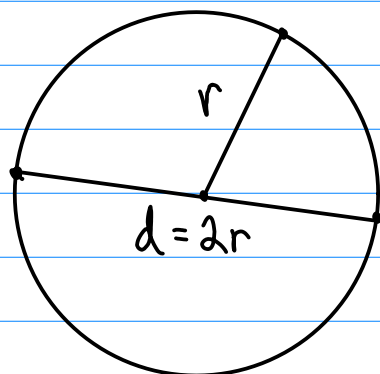
# §6.5: Circumference

\* Circumference: "perimeter" of a  $\odot$ ; distance around a  $\odot$

\*  $C = \pi d$   $2r$

$C = \pi(2r)$

\*  $C = 2\pi r$



• What is  $\pi$ ? Greek letter "pi", represents a #.

• in this course:  $\pi \approx 3.14$  (or  $\frac{22}{7}$ )

• need more accuracy?  $\pi \approx 3.141592653...$

Ex:  $\frac{1}{9} \rightarrow 9 \overline{) 1.0000} = .\bar{1}$

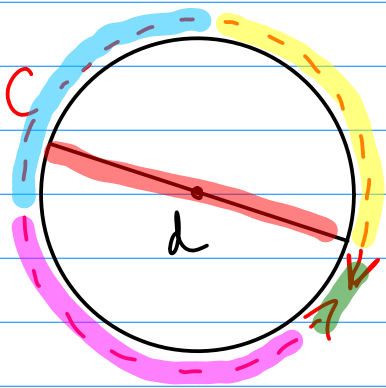
goes on forever  
WITHOUT REPEATING  
↓  
cannot be written as a fraction,  
∴ not rational  
(IRRATIONAL)

Ex:  $2.646464... (2.\overline{64})$

RATIONAL

$$\begin{array}{r} 100x = 264.6464... \\ - x = -2.6464... \\ \hline 99x = 262 \\ \hline x = \frac{262}{99} \end{array}$$

• What does the value of  $\pi$  ( $\approx 3.14$ ) mean?



$$\frac{C}{d} = \frac{\pi \cdot d}{d}$$

$$\frac{C}{d} = \pi$$

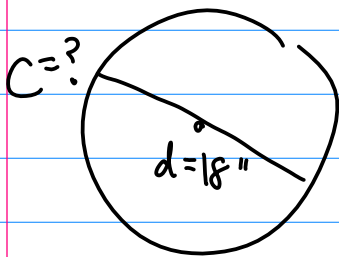
$\pi$  is the ratio of a  $\odot$ 's circumference to its diameter, which is always  $\approx 3.14$ .

$\pi$  is the # of times the diameter fits around the  $\odot$ .

Answer has  $\pi$  in it

Ex:

$\odot$  w/  $d = 18''$ . Find the EXACT value of the circumference



$$C = \pi d \quad 18''$$

~~$$C = 2\pi r$$~~

$$C = \pi (18 \text{ in})$$

$$C = 18\pi \text{ in}$$

approximate C to the nearest tenth

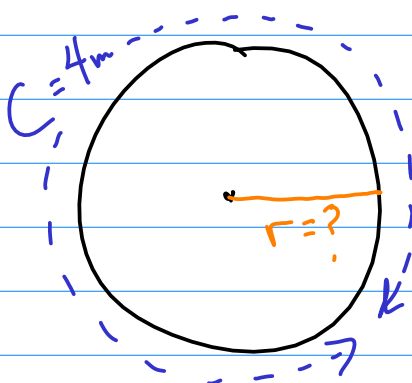
$$C = 18(3.14) \text{ in}$$

$$C = 56.52 \text{ in}$$

$$C \approx 56.5 \text{ in}$$

Ex:

$C = 4\text{m}$ . Find the exact length of the radius.



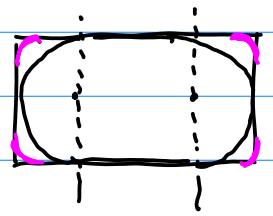
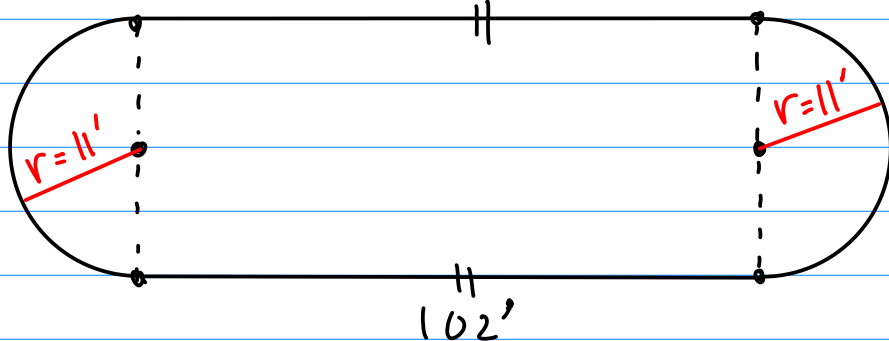
~~$$C = \pi d$$~~ or  $C = 2\pi r$

$$4\text{m} = 2\pi r$$

$$\frac{4\text{m}}{2\pi} = \frac{2\pi r}{2\pi}$$

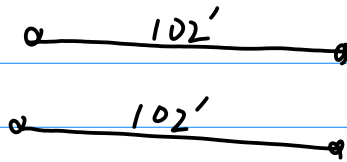
$$\frac{2}{\pi} \text{m} = r$$

Ex: Balboa Ice Rink (irregularly shaped)



Find the perimeter of the rink.

$$P = \text{Circumference of semicircle} + \text{Length of straight sides}$$



$$= \boxed{22\pi' + 204'} \quad \text{EXACT}$$

~~$C = 2\pi r$~~

$$C = 2\pi r$$

$$C = \boxed{2}\pi(\boxed{11})$$

$$C = 22\pi'$$

$$102' + 102'$$

$$204'$$

$$\approx 22(3.14)' + 204'$$

$$\approx 69.1' + 204'$$

$$\approx \boxed{273.1'} \quad \text{Approximated}$$