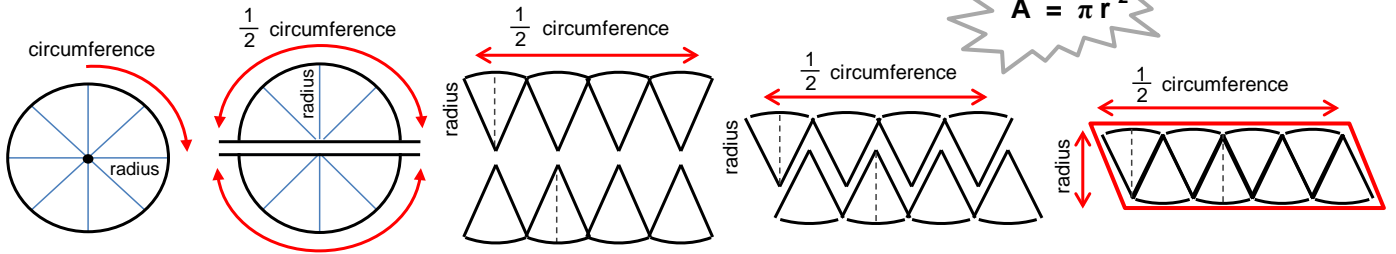


# CIRCLES - AREA

# ANSWERS

Area of a circle =  $\pi \times \text{radius} \times \text{radius}$

How to find the area formula of a circle.



THE **CIRCUMFERENCE** OF A CIRCLE IS THE DISTANCE AROUND IT. THE **AREA** IS THE SPACE INSIDE THE CIRCLE.

WE CAN USE THE CIRCUMFERENCE AND OUR KNOWLEDGE OF QUADRILATERALS TO FIND THE AREA OF A CIRCLE.

WE CAN SEPARATE A CIRCLE IN HALF AND THEN PUT IT BACK TOGETHER TO FORM A PARALLELOGRAM (SHOWN ABOVE).

A PARALLELOGRAM WITH:  
BASE =  $\frac{1}{2}$  CIRCUMFERENCE  
AND  
HEIGHT = RADIUS

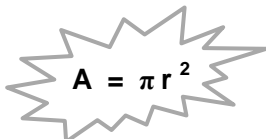
THE AREA OF A PARALLELOGRAM CAN BE FOUND BY MULTIPLYING THE BASE AND HEIGHT (BASE  $\times$  HEIGHT).

**What does all this mean?**

Area of a parallelogram = base  $\times$  height =  $\frac{1}{2} \times \text{circumference} \times \text{radius}$  = Area of a circle  
 circumference =  $2 \times \text{radius} \times \pi$  (substitute into equation)  
 Area of a circle =  $\frac{1}{2} \times (2 \times \text{radius} \times \pi) \times \text{radius}$

**If you combine like terms you will get:**

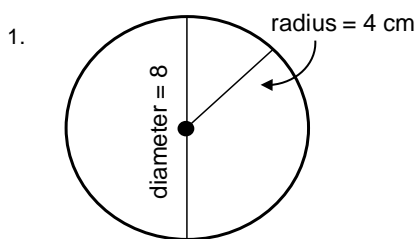
Area of a circle =  $\frac{1}{2} \times 2 \times \pi \times \text{radius} \times \text{radius}$   
**Area =  $\pi \times \text{radius}^2$**



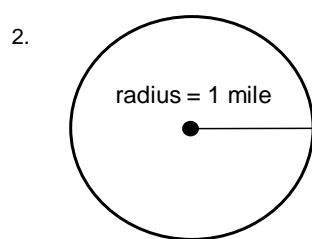
$\pi = 3.141592653589\dots$   
 or approximately 3.14

**Now your turn. Use the area formula to find the area of each circle.**

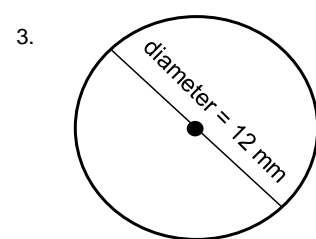
**Use  $\pi = 3.14$**



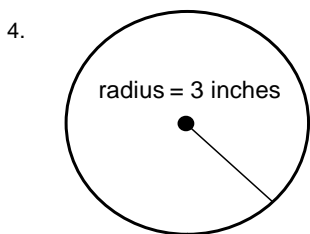
**Area = 50.24 cm<sup>2</sup>**



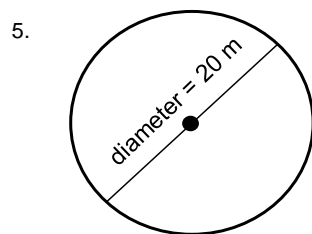
**Area = 3.14 miles<sup>2</sup>**



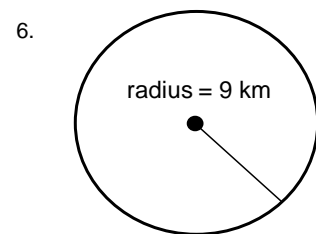
**Area = 113.04 mm<sup>2</sup>**



**Area = 28.26 in<sup>2</sup>**



**Area = 314 m<sup>2</sup>**



**Area = 254.34 km<sup>2</sup>**