

$\theta = \text{theta!}$  Greek symbol represents our angle.

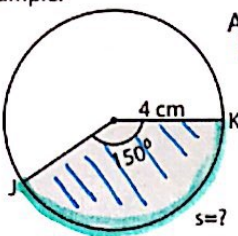
### 6.1: Arc Length & Area of Sectors

Math 3

Name: Ms. Maher

$r = \text{radius}$

Example:



Arc length of a sector (s) =  $\frac{\theta \times \pi \times r}{180^\circ}$

Area =  $\frac{\theta \pi r^2}{360}$

same units as radius

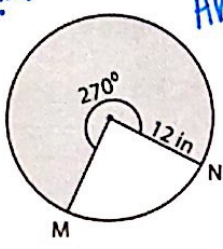
$$= \frac{150^\circ \times 3.14 \times 4}{180^\circ} = 10.47 \text{ cm}$$

$$= \frac{150 \cdot 3.14 \cdot 4^2}{360} = 20.94 \text{ cm}^2$$

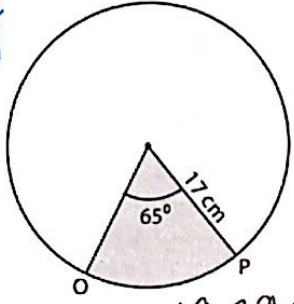
units squared

Find the length of the arc and area of the shaded region. Round the answer to two decimal places. (use  $\pi \approx 3.14$ )

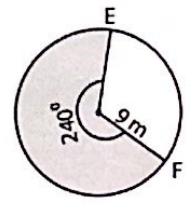
1)  $s = \frac{270\pi(12)}{180}$



2) Area =  $\frac{270\pi(12)^2}{360}$



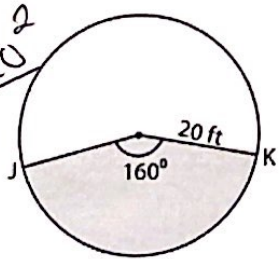
3)



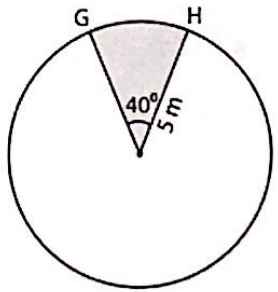
Length of the arc MN = 56.55 in    Length of the arc OP = 19.29 cm    Length of the arc EF = 37.70 m  
 Area of a sector = 339.29 in<sup>2</sup>    Area of a sector = 163.93 cm<sup>2</sup>    Area of a sector = 169.65 m<sup>2</sup>

4)

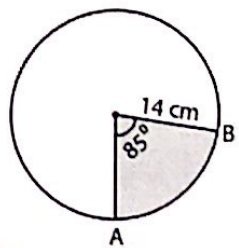
Area =  $\frac{160 \cdot \pi \cdot 20^2}{360}$



5)



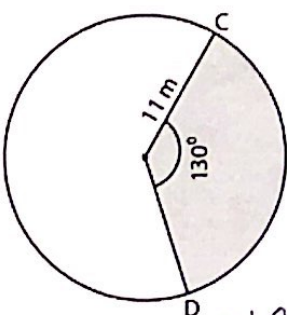
6)



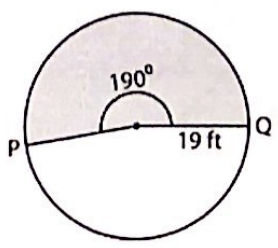
$\frac{85 \cdot \pi \cdot 14^2}{360}$

Length of the arc JK = 55.85 ft    Length of the arc GH = 3.49 m    Length of the arc AB = 20.77 cm  
 Area of a sector = 558.51 ft<sup>2</sup>    Area of a sector = 8.73 m<sup>2</sup>    Area of a sector = 145.39 cm<sup>2</sup>

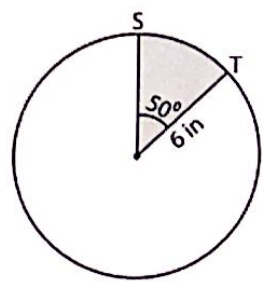
7)



8)



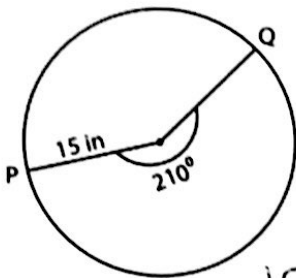
9)



Length of the arc CD = 24.96 m    Length of the arc PQ = 63.01 ft    Length of the arc ST = 5.24 in  
 Area of a sector = 137.27 m<sup>2</sup>    Area of a sector = 598.56 ft<sup>2</sup>    Area of a sector = 15.71 in<sup>2</sup>

Find the missing one. Round the radius and central angle to the nearest whole number.  
Round the arc length to two decimal places. (use  $\pi \approx 3.14$ )

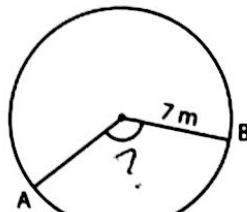
1)



Radius = 15 in  
Central angle = 210°

Length of the arc PQ = 54.98 in

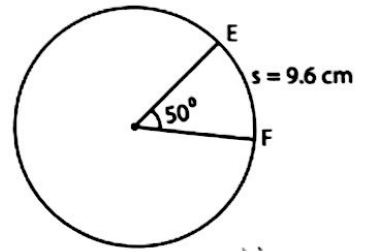
2)



Radius = 7 m  
Central angle = 130°

Length of the arc AB = 15.87 m

3)

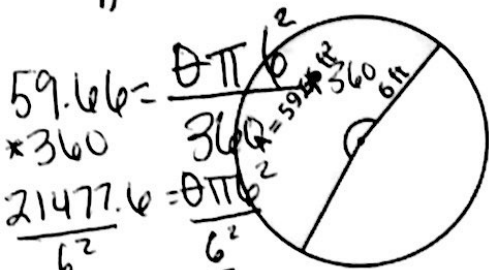


Radius = 11 cm  
Central angle = 50°

Length of the arc EF = 9.6 cm

Find the missing one. Round the radius and central angle to the nearest whole number.  
Round the area to two decimal places. (use  $\pi \approx 3.14$ )

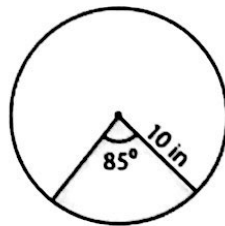
1)



Radius = 6 ft  
Central angle = 190°

Area of a sector = 59.66 ft<sup>2</sup>

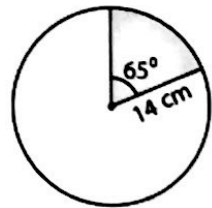
2)



Radius = 10 in  
Central angle = 85°

Area of a sector = 74 in<sup>2</sup>

3)

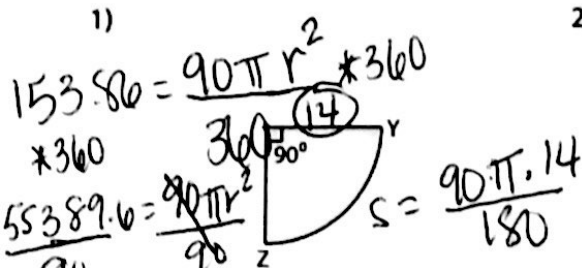


Radius = 14 cm  
Central angle = 65°

Area of a sector = 111 cm<sup>2</sup>

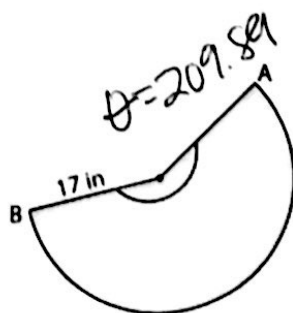
Find the arc length for each sector. Round the answer to two decimal places. (use  $\pi \approx 3.14$ )

1)



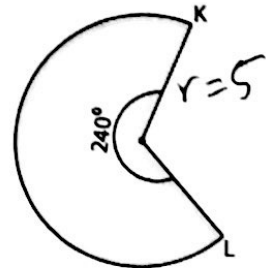
Area = 153.86 cm<sup>2</sup>  
Length of the arc YZ = 21.99

2)



Area = 529.35 in<sup>2</sup>  
Length of the arc AB = 62.28 in

3)



Area = 52.33 m<sup>2</sup>  
Length of the arc KL = 20.94 m