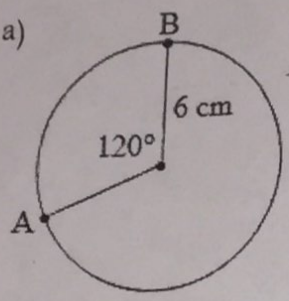
Name: Key

Circles worksheet #3

$\frac{m\alpha^\circ}{360} \cdot 2\pi r$ = Arc Length

1) Find the Arc Length of the following sectors

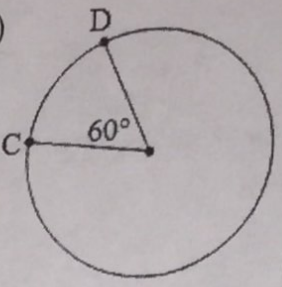
a)



$\frac{120}{360} \cdot 2\pi 6$

12.57_{cm} or $4\pi_{cm}$

b)

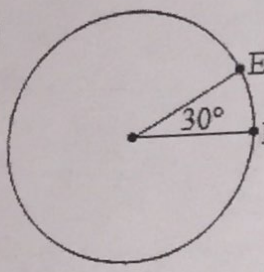


Diameter = 24 cm

$\frac{60}{360} \cdot 2\pi 12$

12.57_{cm} or $4\pi_{cm}$

c)

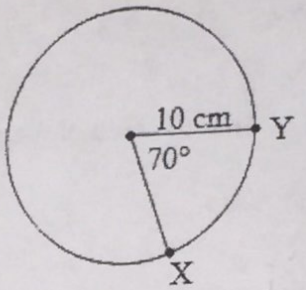


Radius = 30 in

$\frac{30}{360} \cdot 2\pi 30$

15.70 or 5π

d)



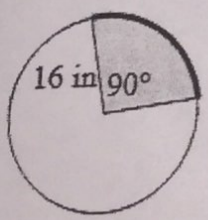
$\frac{70}{360} 2\pi 10$

12.22_{cm} or $\frac{35\pi}{9}$ cm

$\frac{m\alpha^\circ}{360} \pi r^2$ = Area of a Sector

2) Find the Area of the following sectors

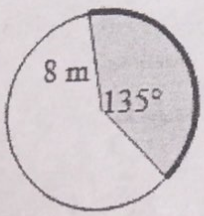
a)



$\frac{90}{360} \cdot \pi 16^2 =$

201.06_{in}^2 or $64\pi_{in}^2$

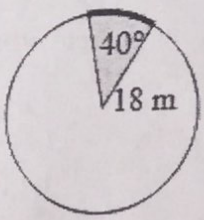
b)



$\frac{135}{360} \cdot \pi 8^2 =$

75.40_m^2 or $24\pi_m^2$

c)



$\frac{40}{360} \cdot \pi 18^2 =$

113.10_m^2 or $36\pi\ m^2$

3) A circle has an arc whose measure is 80° and whose length is 88π. What is the diameter of the circle?

$360 \cdot 88\pi = \frac{80}{360} \cdot \pi d \cdot 360$ $\quad \frac{31680\pi}{80\pi} = \frac{80\pi d}{80\pi}$

$396 = d$

4) A circle has a circumference of 25π. Find the length of an arc whose central angle is 50°.

$2\pi r$

Arc Length $= \frac{50}{360} \cdot 25\pi = 10.91$ units

5) Find the measure of the central angle of a circle if its minor arc length is 14π and the radius is 18 inches.

$\frac{\theta}{360} \cdot 2\pi 18 = 14\pi \cdot 360$

$\frac{\theta 2\pi 18}{2\pi 18} = \frac{5040\pi}{2\pi 18}$ $\quad \theta = 140°$

6) The area of a circle is 225π in^2. Find the area of the sector whose central angle is 45°.

$225\pi = \pi r^2$

$\sqrt{225} = \sqrt{r^2}$ $\quad r = 15$

$\frac{45}{360} \cdot \pi 15^2$

$A = 88.36 in^2$ or $\frac{225\pi}{8}$

7) The central angle of a sector is 60° and the area of the circle is 144π cm^2. What is the area of the sector?

$144\pi = \pi r^2$

$\sqrt{144} = \sqrt{r^2}$ $\quad r = 12$

$\frac{60}{360} \cdot \pi 12^2$

$A = 75.40 cm^2$ or 24π

8) Find the radius of a circle which has a sector area of 9π cm^2 and a central angle of 72°.

$360 \cdot 9\pi = \frac{72}{360} \cdot \pi r^2 \cdot 360$

$\frac{3240\pi}{72\pi} = \frac{72\pi r^2}{72\pi}$ $\quad 45 = r^2$

$r = 6.7$ cm

9) Find the measure of a central angle of a circle if its sector area is 5π in^2 and the radius is 6 in.

$360 \cdot 5\pi = \frac{\theta}{360} \cdot \pi 6^2 \cdot 360$

$\frac{1800\pi}{\pi 36} = \frac{\theta \pi 36}{\pi 36}$ $\quad \theta = 50°$