

Lesson # 34
Area of a Sector

In a circle, the ratio of the measures of two central angles is equal to the ratio of the areas of the two sectors formed.

Where have we seen this before???? Lesson.....

$$\frac{\text{Central Angle}}{360^\circ} = \frac{\text{Sector Area}}$$

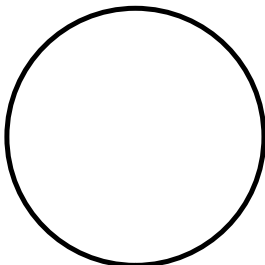
example 1: What is the area of a sector whose ~~radius is 4cm,~~ ^{A = 50.24} and central angle is 120°.

Formula

$$\frac{\sqrt{120^\circ} \text{ CA}}{\sqrt{360^\circ}} = \frac{\text{Sector?}}{A = 50.24}$$

16.75 cm² Sector

example 2:



Sector .785
~~Area?~~
Central angle ~~110~~?
D = 2m

$$\frac{\text{CA?}}{360} = \frac{.785}{A = \pi r^2}$$

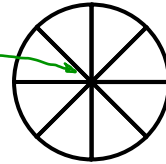
$$A = \pi 1^2$$

$$A = 3.14$$

90°

example 3: What is D and/or R?

central angle is 45 degrees
sector is 9.82 m²



$$r = \sqrt{\frac{A}{\pi}}$$

$$\frac{45}{360} = \frac{9.82}{A?}$$

78.56

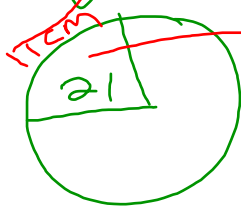
$$r = \sqrt{\frac{78.56}{\pi}}$$

$$r = 5$$

$$D = 10$$

example 4: A circle has a radius of 21 cm.

Its central angle intercepts (goes with) an arc of 11cm.
What is the Area of the sector corresponding with this central angle?



① $\frac{CA}{360} = \frac{\text{Sector?}}{A = \pi r^2}$
 $A = \pi 21^2$
 $A = 1385.44$

missing?
They give us Arc.

② $\frac{?}{360} = \frac{\text{Arc } 11}{C = 2\pi r}$
 $2\pi 21$
 131.95

③ Central Angle = 30°

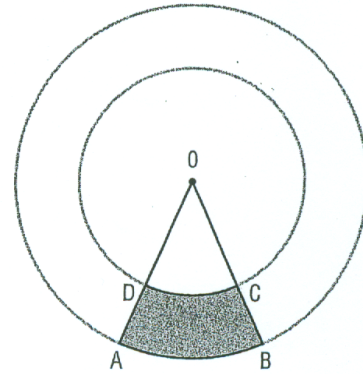
$$\frac{30}{360} = \frac{?}{1385.44}$$

Sector 115.45 cm²

Team Names: _____

In the figure on the right, the area of the smaller disc is 452.16 cm^2 , the circumference of the larger disc is 125.6 cm and the central angle AOB measures 40° .

a) Calculate the perimeter of the shaded region.



b) Calculate the area of the shaded region.