Name: _____ Date: _____

Sectors

To find the area of a sector, we use a proportion using the relationship between the measure of the central angle and the areas.

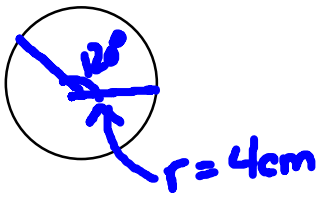
RULE: $\frac{Central\ angle}{360^\circ} = \frac{Area\ of\ the\ Sector}{Area\ of\ the\ Disc}$

$\frac{\angle}{360^\circ} = \frac{S}{A}$ * Always write your rule

Steps:
1. Find the area of the disc
2. Write your rule
3. Solve for the missing term

Example 1: Finding the area of a sector

Central angle = 120°
Radius= 4 cm



① $A = \pi r^2$
$A = \pi (4)^2$
$A = 16\pi \approx 50.27$

② $\frac{\angle}{360^\circ} = \frac{S}{A}$

③ $\frac{120^\circ}{360^\circ} = \frac{S}{50.27}$

$\frac{6032.4}{360} = \frac{360S}{360}$

$16.76 = S$

Arc: 16.76 cm²

Example 2 Finding the measure of the central angle

Area of sector = 235.5 cm
Radius = 10 cm

Steps:
1. Find the area of the disc
2. Write your rule
3. Solve for the missing term

① $A = \pi r^2$
$A = \pi (10)^2$
$A = 100\pi \approx 314.16$

② $\frac{\angle}{360^\circ} = \frac{S}{A}$

③ $\frac{\angle}{360} = \frac{235.5}{314.16}$

$\frac{314.16\angle}{314.16} = \frac{84780}{314.16}$

$\angle = 269.86^\circ$

Central Angle: ≈ 270°

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Example 3 Finding the diameter of a disc

Central angle: 45°

Area of sector: 6.28 cm

Steps:

1. Write your rule
2. Solve for the missing term
3. Use $r = \sqrt{\frac{A}{\pi}}$ to solve for r. Then multiply your radius by 2 to find the diameter

① $\frac{\angle}{360^\circ} = \frac{S}{A}$

② $\frac{45^\circ}{360^\circ} = \frac{6.28}{A}$

$\frac{2\,260.8}{45} = \frac{45A}{45}$

Diameter

~~Radius:~~ _____cm

$A = 50.24\,cm^2$

③ $A = \pi r^2$

$\frac{50.24}{\pi} = \frac{\pi r^2}{\pi}$

$\sqrt{16} = \sqrt{r^2}$

$4cm = r$

④ Find d by multiplying r by 2

$d = 2r$

$d = 2(4)$

$d = 8cm$