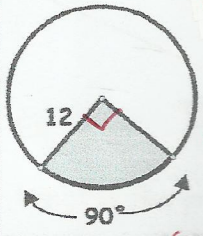
Geometry Worksheet
Arc Length, Sector Area, Segment Area

Name_____
Date_____ Period_____

Find the shaded area. On problems 1-3, find the arc length for the shaded sector also.

1. A_{sector} = $36\pi\ u^2$

Arc length = 6π u

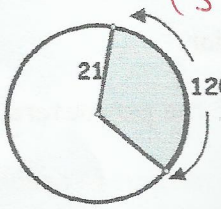


Area $= \left(\frac{1}{4}\right)(144\pi) = 36\pi$

Arc $= \frac{1}{4}(2)(\pi)(12) = 6\pi$

2. A_{sector} = $\frac{121\pi}{3}\ u^2$

Arc length = 14π u.

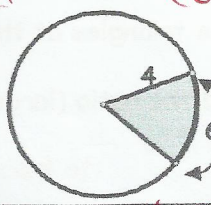


Area $= \left(\frac{1}{3}\right)(121\pi) = \frac{121\pi}{3}$

Arc $= \frac{1}{3}(42\pi) = 14\pi$

3. A_{sector} = $\frac{8\pi}{3}\ u^2$

Arc length = $\frac{4\pi}{3}$ u.



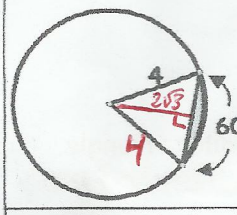
Area $= \left(\frac{1}{6}\right)(16\pi) = \frac{8\pi}{3}$

Arc $= \frac{1}{6}(8\pi) = \frac{4\pi}{3}$

4. $A_{segment}$ = $\left(\frac{8\pi}{3} - 4\sqrt{3}\right) u^2$

$A_{sector} = \left(\frac{1}{6}\right)(16\pi) = \frac{8\pi}{3}\ u^2$

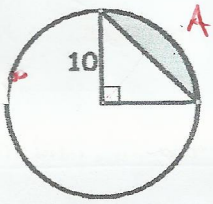
$A_\Delta = 4\sqrt{3}$



5. $A_{segment}$ = $(25\pi - 50)\ u^2$

$A_{sect.} = \frac{1}{4}(100\pi) = 25\pi$

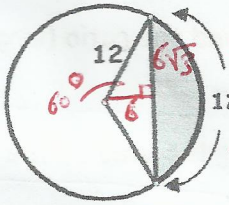
$A_\Delta = 50$



6. $A_{segment}$ = $(48\pi - 36\sqrt{3})\ u^2$.

$A_{sect.} = \frac{1}{3}(144\pi) = 48\pi$

$A_\Delta = 36\sqrt{3}$



7. If BC = 2AB, what fraction of the circle is shaded? (Hint: Let the AB = 2x. D is the center of the big circle. AB is the diameter of a little circle and BC is the diameter of a medium circle. Find the areas in terms of x.)

$A_{shade} = \frac{1}{2}A_{large} - \frac{1}{2}A_{med.} + \frac{1}{2}A_{small}$

$\frac{1}{2}A_{large} = \frac{1}{2}\pi(3x)^2 = 4.5\pi x^2$

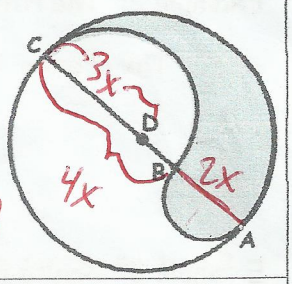
$\frac{1}{2}A_{med.} = \frac{1}{2}\pi(2x)^2 = 2\pi x^2$

$\frac{1}{2}A_{small} = \frac{1}{2}\pi x^2 = .5\pi x^2$

$4.5\pi x^2 - 2\pi x^2 + .5\pi x^2$

$= 3\pi x^2$

what fraction? $\frac{3\pi x^2}{9\pi x^2} = \frac{1}{3}$



8. Find the degree measure of the arc of a sector with area 36π if the area of the circle is 144π.

$A_{sect} = \left(\frac{x°}{360}\right)(Area\ \odot)$

$36\pi = \frac{x}{360}(144\pi)$

$36\pi = .4\pi x$

$x = 90°$

9. Two circles have radii 3 cm. and 5 cm. Find the ratio of their areas.

$A_{3cm} = 9\pi$ cm

$A_{5cm} = 25\pi$ cm

$\frac{9}{25}$

10. The areas of two circles are in the ratio 16 to 9. Find the ratio of their radii.

$\pi r^2 = 16\pi$ $\pi r^2 = 9\pi$

$r = 4$ $r = 3$

ratio: $\frac{4}{3}$