College Review Math
Section 7B

Sector (of a circle)

SECTORS OF CIRCLES

Formulas:

(if θ is in degrees) $$s = \frac{\theta}{360} \bullet 2\pi r$$

Area: $$K = \frac{\theta}{360} \bullet \pi \; r^2$$

(if θ is in radians) $$s = r\theta$$
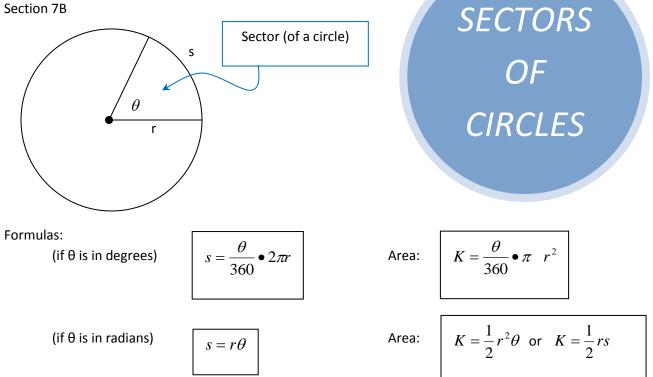
Area: $$K = \frac{1}{2}r^2\theta \;\; \text{or} \;\; K = \frac{1}{2}rs$$

Find the missing measurement. If necessary, round to nearest hundredth.

Examples:

1) radius = 5cm
   arc length = 8cm
   central ∠ = ?

   8 = 5θ
   8/5 = θ
   θ = 1.6 radians

2) radius = 8.2in
   central ∠ = 1.52radians
   arc length = ?

   s = (8.2)(1.52)
   s = 12.464 in.

3) radius = 10ft
   central ∠ = 75°
   arc length = ?

   s = $\frac{75}{360}$ • $2\pi(10)$
   s ≈ 13.09 ft.

4) radius = 12mm
   central ∠ = 0.44 radians
   area of the sector = ?

   K = $\frac{1}{2}(12)^2(0.44)$
   K = 31.68 mm^2

5) central ∠ = 90°
   radius = 9cm
   area of the sector = ?

   K = $\frac{90}{360}$ • π •$(9)^2$
   K = 63.62 cm^2

6) area = 2.178in^2
   central ∠ = 0.9 radians
   radius = ?

   2.178 = $\frac{1}{2}r^2(0.9)$
   2.178 = 0.45r^2
   4.84 = r^2 square root of 4.84 can't be
   r = 2.2 in.   negative (distance)