

Formulas:	<u>arc length</u>	<u>area</u>
Convert degree-minute-seconds to decimal $D^\circ + (M'/60) + (S''/3600)$	$D^\circ \quad s = \frac{\theta}{360} \cdot 2\pi \cdot r$	$K = \frac{\theta}{360} \cdot \pi \cdot r^2$
Convert decimal-degree to minutes-seconds $D^\circ + \text{decimal}(60) + \text{repeat for seconds}$		
Convert degrees to radians $D^\circ \cdot \pi / 180$	Rad $s = r\theta$	$K = \frac{1}{2}r^2\theta \quad \text{or} \quad K = \frac{1}{2}rs$
Convert radians to degrees $R \cdot 180 / \pi$		

For all worksheet problems, if necessary, round to nearest hundredth.
Change each degree measurements into **decimal** form.

1) $435^\circ 36' = \frac{435.6^\circ}{435 + \frac{36}{60}}$ 2) $-19^\circ 48' 22'' = \frac{-19.81^\circ}{-[19 + \frac{48}{60} + \frac{22}{3600}]}$

Change each degree measurement into **minute-second** form.

3) $200.015^\circ = \frac{200^\circ 54''}{60(0.15) = 0.9, \quad 60(0.9) = 54}$ 4) $683.32^\circ = \frac{683^\circ 19' 12''}{60(0.32) = 19.2, \quad 60(0.2) = 12}$

Convert each degree measurement to **radians**.

5) $-325^\circ = \frac{-5.67}{-325 \cdot \frac{\pi}{180}}$ 6) $92^\circ 14' = \frac{1.61}{[92 + \frac{14}{60}] \cdot \frac{\pi}{180}}$

Convert each degree measurement to **radians**. Leave answers in **terms of π** .

7) $135^\circ = \frac{3\pi/4}{\cancel{3} \frac{\cancel{135}}{1} \cdot \frac{\pi}{\cancel{180}^4}}$ 8) $-240^\circ = \frac{-4\pi/3}{\cancel{4} \frac{\cancel{240}}{1} \cdot \frac{\pi}{\cancel{180}^3}}$

Convert each radian measurement to degrees.

9) $1.85 = \frac{106.00^\circ}{1.85 \cdot \frac{180}{\pi}}$ 10) $4.1 = \frac{234.91^\circ}{4.1 \cdot \frac{180}{\pi}}$
 11) $-\frac{\pi}{9} = \frac{-20^\circ}{-\frac{\pi}{9} \cdot \frac{180}{\pi}}$ 12) $\frac{11\pi}{6} = \frac{330^\circ}{\frac{11\pi}{6} \cdot \frac{180}{\pi}}$

Name one positive and one negative coterminal angle for each angle given.

13) 13° $13 + 360n$ $13 - 360n$ 14) -600.75° $-600.75 + 360 + 360n$ -600.75 ± 360 15) $252^\circ 11'$ $252^\circ 11' + 360n$ $252^\circ 11' - 360n$
 (+) $\underline{373^\circ}$ (+) $\underline{119.25^\circ}$ (+) $\underline{612^\circ 11'}$
 (-) $\underline{347^\circ}$ (-) $\underline{240.75^\circ}$ (-) $\underline{107^\circ 49'}$

Find the missing measurement or measurements for each circle sector described.

- 16) radius = 8cm
central angle = .75 radians
Find the arc length and area

$$s = r\theta$$

$$s = 8(0.75)$$

$$s = 6cm$$

$$K = \frac{1}{2}rs$$

$$K = \frac{1}{2}(8)(6)$$

$$K = 24cm^2$$

- 17) arc length = 63mm
central angle = 4.2 radians
Find the radius and area

$$s = r\theta$$

$$63 = 4.2r$$

$$r = 15mm$$

$$K = \frac{1}{2}rs$$

$$K = \frac{1}{2}(15)(63)$$

$$K = 472.5mm^2$$

- 18) area = 15.2cm²
central angle = 1.9 radians
Find the radius and arc length

$$K = \frac{1}{2}r^2\theta$$

$$15.2 = \frac{1}{2}(1.9)r^2$$

$$30.4 = 1.9r^2$$

$$16 = r^2$$

$$r = 4cm$$

$$s = r\theta$$

$$s = 4(1.9)$$

$$s = 7.6cm$$

- 19) radius = 28ft
central angle = 270°
Find the arc length

$$s = \frac{\theta}{360} \cdot 2\pi r$$

$$s = \frac{270}{360} \cdot 2\pi(28)$$

$$s = 131.95ft$$

- 20) radius = 11.5in
central angle = 35°
Find the area

$$K = \frac{\theta}{360} \cdot \pi r^2$$

$$K = \frac{35}{360} \cdot \pi(11.5)^2$$

$$K = 40.39in^2$$

- 21) area = 22.5 π cm²
central angle = 225°
Find the arc length

$$K = \frac{\theta}{360} \pi r^2$$

$$22.5\pi = \frac{225}{360} \pi r^2$$

$$22.5 = \frac{225}{360} r^2$$

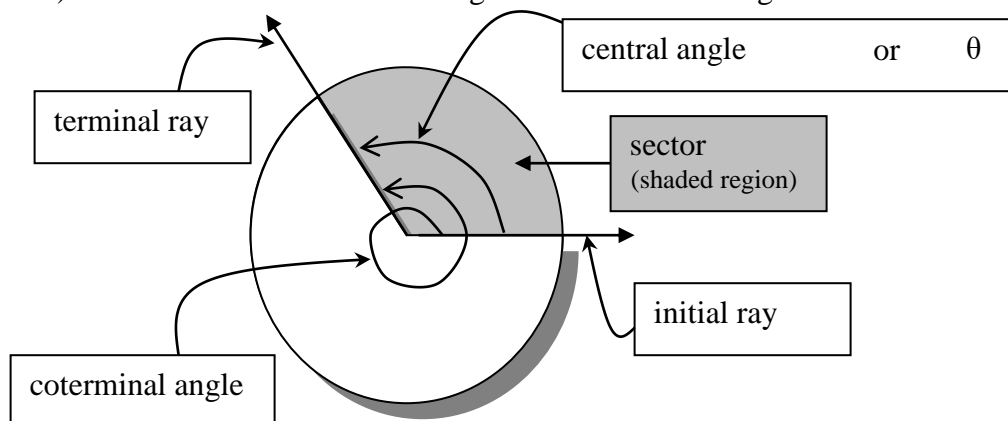
$$36 = r^2 \quad r = 6$$

$$s = \frac{\theta}{360} 2\pi r$$

$$s = \frac{225}{360} 2\pi(6)$$

$$s \approx 23.56 cm$$

- 22) Use the word bank to the right to label the drawing below.



WORD BANK

initial ray
terminal ray
central angle
 θ
sector
coterminal angle