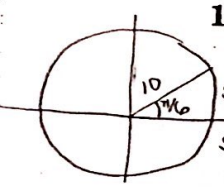
Central Angles and Arcs

• Sectors of Circles
HW: 5-2 Practice worksheet evens
Text p. 265 Written 5+14

Given the radian measure of a central angle, find the measure of its intercepted arc in terms of π in a circle of radius 10 cm.



1. $\frac{\pi}{6}$

$s = \frac{\frac{\pi}{6}}{2\pi} \cdot 2\pi(10)$

$s = \frac{5\pi}{3}$ cm

2. $\frac{\pi}{3}$

$s = \frac{\pi}{3} \cdot 10 = \frac{10\pi}{3}$ cm

3. $\frac{\pi}{2}$

$s = \frac{\pi}{2} \cdot 10 = 5\pi$ cm

4. $\frac{\pi}{5}$

$s = \frac{\pi}{5} \cdot 10 = 2\pi$ cm

5. $\frac{3\pi}{5}$

$s = \frac{3\pi}{5} \cdot 10 = 6\pi$ cm

6. $\frac{4\pi}{7}$

$s = \frac{4\pi}{7} \cdot 10 = \frac{40\pi}{7}$ cm

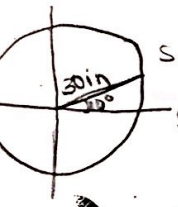
7. $\frac{\pi}{12}$

$s = \frac{10\pi}{12} = \frac{5\pi}{6}$ cm

8. $\frac{\pi}{24}$

$s = \frac{10\pi}{24} = \frac{5\pi}{12}$ cm

Given the measurement of a central angle, find the measure of its intercepted arc in terms of π in a circle of diameter 60 in.



9. 10°

$s = 2\pi(30) \cdot \frac{10^\circ}{360^\circ}$

$s = \frac{60\pi}{36} = \frac{10\pi}{6} = \frac{5\pi}{3}$ in

10. 60°

$s = 60\pi \cdot \frac{60^\circ}{360^\circ}$

$= \frac{60\pi}{60} = \pi$ in.

11. 42°

$s = 60\pi \cdot \frac{42}{360}$

$= \frac{42\pi}{60} = \frac{21\pi}{30} = \frac{7\pi}{10}$ in.

12. 50°

$s = 60\pi \cdot \frac{50}{360}$

$= \frac{50\pi}{60} = \frac{5\pi}{6}$ in

13. 72°

$s = 60\pi \cdot \frac{72}{360}$

$= \frac{72\pi}{60} = \frac{36\pi}{30} = \frac{6\pi}{5}$ in

14. 110°

$s = 60\pi \cdot \frac{110}{360}$

$= \frac{110\pi}{60} = \frac{11\pi}{6}$ in

15. 35°

$s = \frac{35\pi}{60} = \frac{7\pi}{12}$ in

16. 65°

$s = \frac{65\pi}{60} = \frac{13\pi}{12}$ in

Given the measure of an arc, find the degree measure to the nearest tenth of the central angle it subtends in a circle of radius 16 cm.

$2\pi r = 32\pi$ cm

17. 87

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

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

$\theta = \frac{360(87)}{32\pi}$

$= 311.5^\circ$

18. 5.6

$\theta = \frac{360(5.6)}{32\pi}$

$= 20.1^\circ$

19. 12

$\theta = \frac{360(12)}{32\pi}$

$= 43^\circ$

20. 25

$\theta = \frac{360(25)}{32\pi}$

$= 89.5^\circ$

21. 10.24

$\theta = \frac{360(10.24)}{32\pi}$

$= 36.7^\circ$

22. 7.9

$\theta = \frac{360(7.9)}{32\pi}$

$= 28.3^\circ$

23. 11

$\theta = \frac{360(11)}{32\pi}$

$= 39.4^\circ$

24. 6

$\theta = \frac{360(6)}{32\pi}$

$= 21.5^\circ$

Find the area of each sector to the nearest tenth, given its central angle, θ, and the radius of the circle.

25. $\theta = \frac{\pi}{6}$, $r = 14$ cm

$K = \frac{\frac{\pi}{6}}{2\pi} \cdot \pi(14)^2$

$= \frac{196\pi}{12}$ cm^2

$= \frac{49\pi}{3}$ cm^2

26. $\theta = \frac{\pi}{6}$, $r = 12$ ft

$K = \frac{\frac{\pi}{6}}{2\pi} \cdot \pi(12)^2$

$= \frac{144\pi}{12}$ ft^2

$= 12\pi$ ft^2