

Name: _____

Period: _____

11.2 Radians

Find the radian measure of angle θ , if θ is a central angle in a circle of radius r , and θ cuts off an arc of length s .

1. $r = 3$ cm, $s = 9$ cm $\theta = 3$
2. $r = 6$ cm, $s = 3$ cm $\theta = 1/2$
3. $r = 10$ inches, $s = 5$ inches $\theta = 1/2$
4. $r = 5$ inches, $s = 10$ inches $\theta = 2$
5. $r = 4$ inches, $s = 12\pi$ inches $\theta = 3\pi$
6. $r = 3$ inches, $s = 12$ inches $\theta = 4$
7. $r = \frac{1}{4}$ cm, $s = \frac{1}{2}$ cm $\theta = 2$
8. $r = \frac{1}{4}$ cm, $s = \frac{1}{8}$ cm $\theta = 1/2$

9. Convert $\frac{11\pi}{12}$ radians to degrees. 165°

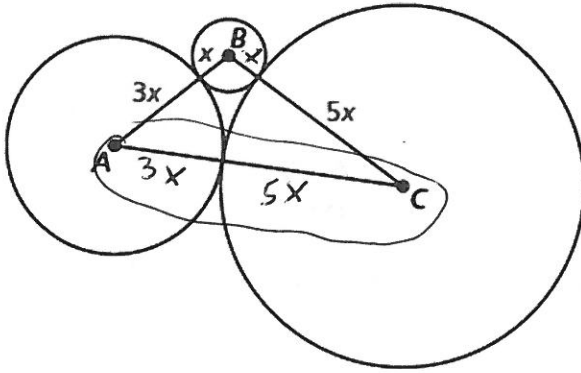
10. Convert $\frac{\pi}{8}$ radian to degrees. 22.5°

Convert the following measure to radians.

11. $30^\circ = \pi/6$
12. $60^\circ = \pi/3$
13. $90^\circ = \pi/2$
14. $270^\circ = 3\pi/2$
15. $260^\circ = 13\pi/9$
16. $340^\circ = 17\pi/9$
17. $-150^\circ = -5\pi/6$
18. $-210^\circ = -7\pi/6$
19. $420^\circ = 7\pi/3$
20. $390^\circ = 13\pi/6$
21. $-135^\circ = -3\pi/4$
22. $-120^\circ = -2\pi/3$

(15) $\frac{260\pi}{180} = \frac{13\pi}{9}$

23. **MATHEMATICAL CONNECTIONS** The sum of the circumferences of circles A, B, and C is 63π . Find AC.



$$6x\pi + 2x\pi + 10x\pi = 63\pi$$

$$18x\pi = 63\pi$$

$$\frac{18x}{18} = \frac{63}{18}$$

$$x = 3.5$$

$$8(3.5) = 28$$

24. An arc in a circle where the radius is 3 cm has a length of 12 cm. Find the measure of the central angle in radians. Then, convert the angle to degrees.

$$\theta = 4 \text{ rad}$$

$$\frac{4 \cdot 180}{\pi} = 229.3^\circ$$

In Exercises 25 and 26, find the circumference of the circle with the given equation. Write the circumference in terms of π .

25. $x^2 + y^2 = 16$ 8π

26. $(x + 2)^2 + (y - 3)^2 = 9$ 6π

Convert the following angle measures from radians to degrees.

31. $\frac{\pi}{3}$ 60° 32. $\frac{\pi}{4}$ 45° 33. $\frac{2\pi}{3}$ 120° 34. $\frac{3\pi}{4}$ 135°

35. $\frac{-7\pi}{6}$ -210° 36. $\frac{-5\pi}{6}$ -150° 37. $\frac{5\pi}{3}$ 300° 38. $\frac{7\pi}{3}$ 420°

39. 4π 720° 40. 3π 540° 41. $\frac{\pi}{12}$ 15° 42. $\frac{5\pi}{12}$ 75°