ILLAWARRA TUTORING

In this worksheet you will learn about the radian as a measure of angles and how to convert between degrees and radians. Each question includes an instruction to guide you through the required steps.

Easy Questions

1. Define in your own words what a radian is.
2. Convert the angle 180° to radians.
3. Convert the angle 90° to radians.
4. Convert the angle $\frac{\pi}{2}$ radians to degrees.
5. Convert the angle 360° to radians.

Intermediate Questions

6. Convert 45° to radians.
7. Convert 30° to radians.
8. Convert 120° to radians.
9. Convert 60° to radians.
10. Convert the angle $\frac{2\pi}{3}$ radians to degrees.
11. Convert 210° to radians.
12. Convert 75° to radians.
13. Convert the angle 0.5 radians to degrees.
14. Convert the angle $\frac{3\pi}{4}$ radians to degrees.
15. Convert 105° to radians.
16. Convert the angle $\frac{7\pi}{6}$ radians to degrees.
17. Convert 22.5° to radians.

18. Explain why the conversion factor from degrees to radians is $\frac{\pi}{180}$.
19. Convert 15° to radians.
20. Convert the angle $\frac{5\pi}{4}$ radians to degrees.

Hard Questions

21. Prove that one degree is equivalent to $\frac{\pi}{180}$ radians.
22. Convert 240° to radians.
23. Show that converting 37° to radians and then converting the result back to degrees yields 37°. Explain each step.
24. Convert the angle $\frac{11\pi}{30}$ radians to degrees and simplify your answer.
25. A wheel rotates through an angle of 0.75 radians. Convert this angle to degrees.
26. Determine the degree measure of the angle $\frac{7\pi}{10}$ radians.
27. Find the value of x in degrees such that x° is equivalent to 1 radian. Write and solve the equation $x \times \frac{\pi}{180} = 1$.
28. Determine the radian measure of an angle measuring 29.5° and express your answer as a simplified fraction in terms of π.
29. Convert 0.873 radians to degrees, rounding your answer to one decimal place.
30. An angle is given as $\frac{5}{6}$ of a full rotation. Convert this fraction to its equivalent in radians.