CONVERTING BETWEEN RADIANS AND DEGREES

Remember $\boldsymbol{\pi\ radians = 180°}$ which means that:

$1\ radian = \frac{180°}{\pi}$ and $1° = \frac{\pi}{180} radians$

PROBLEMS:

Convert the following angles into radians.

1) $45° =$

2) $120° =$

3) $30° =$

4) $100° =$

5) $900° =$

Convert the following angles into degrees.

6) $\frac{3\pi}{2} =$

7) $\frac{\pi}{3} =$

8) $\frac{3\pi}{54} =$

9) $\frac{5\pi}{12} =$

10) $\frac{9\pi}{2} =$

CONVERTING BETWEEN RADIANS AND DEGREES

Convert the following angles into radians or degrees (the opposite of what is given).

11) $\frac{\pi}{2} =$

12) $135° =$

13) $\frac{7\pi}{8} =$

14) $25° =$

15) $3\pi =$

CONVERTING BETWEEN RADIANS AND DEGREES

SOLUTIONS:

Convert the following angles into radians.

1) $45° = 45° \times \frac{\pi}{180°} rad = \frac{(45 \div 45)\pi}{(180 \div 45)} = \frac{\pi}{4}\ rad$

2) $120° = 120° \times \frac{\pi}{180°}\ rad = \frac{(120 \div 60)\pi}{(180 \div 60)} = \frac{2\pi}{3}\ rad$

3) $30° = 30° \times \frac{\pi}{180°} rad = \frac{(30 \div 30)\pi}{(180 \div 30)} = \frac{\pi}{6}\ rad$

4) $100° = 100° \times \frac{\pi}{180°}\ rad = \frac{(100 \div 20)\pi}{(180 \div 20)} = \frac{5\pi}{9}\ rad$

5) $900° = 900° \times \frac{\pi}{180°} rad = \frac{(900 \div 180)\pi}{(180 \div 180)} = 5\pi\ rad$

Convert the following angles into degrees.

6) $\frac{3\pi}{2} = \frac{3\pi}{2} \times \frac{180°}{\pi} = \frac{540°}{2} = 270°$

7) $\frac{\pi}{3} = \frac{\pi}{3} \times \frac{180°}{\pi} = \frac{180°}{3} = 60°$

8) $\frac{3\pi}{54} = \frac{3\pi}{54} \times \frac{180°}{\pi} = \frac{540°}{54} = 10°$

9) $\frac{5\pi}{12} = \frac{5\pi}{12} \times \frac{180°}{\pi} = \frac{900°}{12} = 75°$

10) $\frac{9\pi}{2} = \frac{9\pi}{2} \times \frac{180°}{\pi} = \frac{1620°}{2} = 810°$

CONVERTING BETWEEN RADIANS AND DEGREES

Convert the following angles into radians or degrees (the opposite of what is given).

11) $\frac{\pi}{2} = \frac{\pi}{2} \times \frac{180^\circ}{\pi} = \frac{180^\circ}{2} = 90^\circ$

12) $135^\circ = 135^\circ \times \frac{\pi}{180^\circ}\ rad = \frac{135\pi}{180} = \frac{45\times 3\pi}{45\times 4} = \frac{3\pi}{4}\ rad$

13) $\frac{7\pi}{8} = \frac{7\pi}{8} \times \frac{180^\circ}{\pi} = \frac{7\times 180^\circ}{8} = \frac{1260^\circ}{8} = 157.5^\circ$

14) $25^\circ = 25^\circ \times \frac{\pi}{180^\circ}\ rad = \frac{25\pi}{180} = \frac{(25\div 5)\pi}{(180\div 5)} = \frac{5\pi}{36}\ rad$

15) $3\pi = 3\pi \times \frac{180^\circ}{\pi} = 3 \times 180^\circ = 540^\circ$