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CONVERTING BETWEEN RADIANS AND DEGREES

Remember $\underline{\pi \ radians} = 180^{\circ}$ which means that:

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

PROBLEMS:

Convert the following angles into radians.

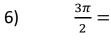
1)
$$45^{\circ} =$$

2)
 $120^{\circ} =$

3)
 $30^{\circ} =$

4)
 $100^{\circ} =$

Convert the following angles into degrees.



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

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

14)
$$25^{\circ} =$$

15)
$$3\pi =$$



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SOLUTIONS:

Convert the following angles into radians.

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

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

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

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

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

Convert the following angles into degrees.

- 6) $\frac{3\pi}{2} = \frac{3\pi}{2} \times \frac{180^{\circ}}{\pi} = \frac{540^{\circ}}{2} = 270^{\circ}$
- 7) $\frac{\pi}{3} = \frac{\pi}{3} \times \frac{180^{\circ}}{\pi} = \frac{180^{\circ}}{3} = 60^{\circ}$
- 8) $\frac{3\pi}{54} = \frac{3\pi}{54} \times \frac{180^{\circ}}{\pi} = \frac{540^{\circ}}{54} = 10^{\circ}$
- 9) $\frac{5\pi}{12} = \frac{5\pi}{12} \times \frac{180^{\circ}}{\pi} = \frac{900^{\circ}}{12} = 75^{\circ}$

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



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