

Degree-Minute-Second (DMS)

Many navigational systems use the degree-minute-second (DMS) format. $DDD^{\circ}MM'SS''$

Example: $123^{\circ}45'43''$

Some calculations, however, use a decimal format for degree measures. Decimal format is also easier to enter into calculators.

$$\text{Decimal} = \text{Degrees} + \frac{\text{Minutes}}{60} + \frac{\text{Seconds}}{3600}$$

Example:

Converting from DMS to Decimal

Given: $123^{\circ}45'43''$

Convert to Decimal: $123 + \frac{45}{60} + \frac{43}{3600} = \boxed{123.762^{\circ}}$

Converting from Decimal to DMS

Degrees: the whole degrees to the left of the decimal point

Minutes: multiply the decimal degrees by 60; the minutes is the whole number to the left of the decimal point

Seconds: multiply the decimal minutes by 60 and use the product rounded to 1 decimal place

Example: Express 235.567° in DMS

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Degrees: 235°

Minutes: $0.567 * 60 = 34.02 \Rightarrow 34'$

Seconds: $0.02 * 60 = 1.2''$

Answer: $235.567^{\circ} = \boxed{235^{\circ} 34' 1.2''}$