

Examples

`Dimension (5 N 3 cm) = "Energy"` Notice that can't find torque.

`Dimension (5 Ω 3 A) = "ElectricPotential"`

`Dimension (9.25) = "Dimensionless"`

`Dimension (3.25  $\frac{\text{kJ}}{\text{kg}}$ ) = "AbsorbedDose"` This is a medical unit which have the dimensions of the specific mass enthalpy.

`Dimension (5  $\frac{\text{Rad}}{\text{min}}$ ) = "AngularSpeed"`

Base Dimensions

Base units and dimensions are

findrows (Dimensions, 1, 4) =

"AmountOfSubstance"	mol	u_N	1
"ElectricCurrent"	A	u_C	1
"Information"	bit	u_B	1
"LuminousIntensity"	cd	u_l	1
"Mass"	kg	u_M	1
"PlaneAngle"	Rad	u_A	1
"SolidAngle"	sr	u_S	1
"ThermodynamicTemperature"	K	u_T	1
"Time"	s	u_t	1

For a derived unit:

`Dimension (5 Ω) = "ElectricResistance"`

`Dimension (5 Ω, "base") = 1  $\frac{u_M u_L^2}{u_t^3 u_C}$`

Undefined units

'Rad isn't a defined unit: `UnitsOf (5  $\frac{\text{Rad}}{\text{min}}$ ) = ■` but `UoM (5  $\frac{\text{Rad}}{\text{min}}$ ) = 1  $\frac{\text{Rad}}{\text{s}}$`

Because 'rad≡1, we have:

`Dimension (5  $\frac{\text{rad}}{\text{min}}$ ) = "Frequency"`

New dimensions

Let `New :=  $\frac{\text{A}}{\text{J}}$` then `Dimension (New) = ■`

We can add this new dimension

$$\text{Dimensions} := \text{stack} \left(\left[\begin{array}{c} \text{"MyNewDimension"} \frac{\frac{A}{J} \frac{u_c u_t^2}{u_M u_L}}{2} 0 \end{array} \right], \text{Dimensions} \right)$$

$$\text{Dimension}(\text{New}) = \text{"MyNewDimension"}$$
$$\text{Dimension}(\text{New}, \text{"base"}) = 1 \frac{\frac{u_c u_t^2}{u_M u_L}}{2}$$

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ToDo: Energy conversions. Add Change of temp units.