

2021-01-15 Webel: Darren Kelly: Demonstration of Quantity equivalence in Mathematica for SysML RTF

References:

- <https://reference.wolfram.com/language/guide/Units.html>
- <https://reference.wolfram.com/language/tutorial/UnitsOverview.html>

Example: Using standard input form:

```
In[487]:= q1 = Quantity[1, "Feet"]
```

```
Out[487]= 1 ft
```

```
In[2]:= q2 = Quantity[0.3048, "Meter"]
```

```
Out[2]= 0.3048 m
```

```
In[3]:= CompatibleUnitQ[q1, q2]
```

```
Out[3]= True
```

```
In[4]:= UnitDimensions[q1]
```

```
Out[4]= {{LengthUnit, 1}}
```

```
In[5]:= UnitConvert[q1, "Meter"]
```

```
Out[5]=  $\frac{381}{1250}$  m
```

```
In[6]:= N[UnitConvert[q1, "Meter"]]
```

```
Out[6]= 0.3048 m
```

Mathematica can compare q1 and q2 despite different units:

```
In[7]:= q1 == q2
```

```
Out[7]= True
```

Example: Using concise input form with units discovery:

```
In[8]:= l1 = 1000 m
```

```
Out[8]= 1000 m
```

```
In[9]:= l2 = 1 km
```

```
Out[9]= 1 km
```

```
In[10]:= l3 = 1.1 km
```

```
Out[10]= 1.1 km
```

```
In[11]:= l1 == l2
```

```
Out[11]= True
```

```
In[12]:= l1 == l3
```

```
Out[12]= False
```