Unit Conversions

Convert the units in the following cases, or note that the conversion is impossible. First, show the procedure without using `Quantity`, then use the `.to` converter to convert the quantities.

```
In [1]: from thermostate import units, Q_
```

0.76 N to lb_f

```
In [2]: newtons = Q_(0.76, 'N')
        lbf = newtons.to('lbf')
        print(round(lbf, 2))
```

```
0.17 force_pound
```

Answer: 0.76 N = 0.17 lb_f

1398.41 BTU/day to W

```
In [3]: BTU_day = Q_(1398.41, 'BTU/day')
        watts = BTU_day.to('W')
        print(round(watts, 2))
```

```
17.08 watt
```

Answer: 1398.41 BTU/day = 17.08 W

108.28 ft^3 to L

```
In [4]: ft_3 = Q_(108.28, 'ft**3')
        liters = ft_3.to('L')
        print(round(liters, 2))
```

```
3066.15 liter
```

Answer: 108.28 ft3 = 3066.15 L

67 kW to $ft \cdot lb_f$

```
In [5]: kw = Q_(67.0, 'kW')
        ft_lbf = kw.to('ft*lbf')
```

```
        ---------------------------------------------------------------------------

        DimensionalityError                       Traceback (most recent call last)

        <ipython-input-5-553828a2917d> in <module>()
          1 kw = Q_(67.0, 'kW')
        ----> 2 ft_lbf = kw.to('ft*lbf')


        DimensionalityError: Cannot convert from 'kilowatt' ([length] ** 2 * [mass] / [time] **
```

Note that this conversion is impossible. We can see the reason is because the **dimensions** of the two quantities don't match, as shown at the bottom of the error message:

```
DimensionalityError: Cannot convert from 'kilowatt' ([length] ** 2 * [mass] / [time] ** 3) to
```

11591.43 mph to m/s

```
In [6]: mi_hr = Q_(11591.43, 'miles/hr')
        m_s = mi_hr.to('m/s')
        print(round(m_s, 2))
```

```
5181.83 meter / second
```

Answer: 11591.43 mph = 5181.83 m/s