

velocity

A CircuitPython helper class for unit conversion of velocity objects. It consists of eight helpers for converting velocity values to and from metric and imperial values. Constants for the velocity of sound and light are also provided as helpers.

- Author(s): JG for Cedar Grove Studios

Implementation Notes

Hardware:

Software and Dependencies:

- Adafruit CircuitPython firmware for the supported boards: <https://github.com/adafruit/circuitpython/releases>

helper_class `velocity.mps_to_fps(velocity_mps)`

Conversion of meters-per-second velocity to a feet-per-second velocity value.

Parameters:

- **velocity_mps** – The velocity in meters-per-second. Can be any numeric value. No default value.

helper_class `velocity.fps_to_mps(velocity_fps)`

Conversion of feet-per-second velocity to a meters-per-second velocity value.

Parameters:

- **velocity_fps** – The velocity in feet-per-second. Can be any numeric value. No default value.

helper_class `velocity.kmph_to_mph(velocity_kmph)`

Conversion of kilometers-per-hour velocity to a miles-per-hour velocity value.

Parameters:

- **velocity_kmph** – The velocity in kilometers-per-hour. Can be any numeric value. No default value.

helper_class `velocity.mph_to_kmph(velocity_mph)`

Conversion of miles-per-hour velocity to a kilometers-per-hour velocity value.

Parameters:

- **velocity_mph** – The velocity in miles-per-hour. Can be any numeric value. No default value.

helper_class `velocity.knots_to_kmph(velocity_knots)`

Conversion of knots velocity to a kilometers-per-hour velocity value.

Parameters:

- **velocity_knots** – The velocity in knots. Can be any numeric value. No default value.

helper_class velocity.kmph_to_knots(velocity_kmph)

Conversion of kilometers-per-hour velocity to a knots velocity value.

Parameters:

- **velocity_kmph** – The velocity in kilometers-per-hour. Can be any numeric value. No default value.

helper_class velocity.knots_to_mph(velocity_knots)

Conversion of knots velocity to a miles-per-hour velocity value.

Parameters:

- **velocity_knots** – The velocity in knots. Can be any numeric value. No default value.

helper_class velocity.mph_to_knots(velocity_mph)

Conversion of miles-per-hour velocity to a knots velocity value.

Parameters:

- **velocity_mph** – The velocity in miles-per-hour. Can be any numeric value. No default value.

Example:

```
>>> from cedargrove_unit_converter.velocity import *
>>> mps_to_fps(100)      # Meters-Per-Second to Feet-Per-Second Converter
328.084

>>> fps_to_mps(328.084)  # Feet-Per-Second to Meters-Per-Second Converter
100.0

>>> kmph_to_mph(68)      # Kilometers-Per_Hour to Miles-Per_Hour Converter
42.257

>>> mph_to_kmph(42.257)  # Miles-Per_Hour to Kilometers-Per_Hour Converter
68.0

>>> knots_to_kmph(22)    # Knots to Kilometers-Per-Hour Converter
40.7405

>>> kmph_to_knots(40.7405) # Kilometers-Per-Hour to Knots Converter
22.0

>>> knots_to_mph(22)     # Knots to Miles-Per-Hour Converter
25.3172

>>> mph_to_knots(25.3172) # Miles-Per-Hour to Knots Converter
22.0
```

helper_class velocity.velocity_of_light()

Returns the constant value for the speed of light in meters-per-second. The value returned is 299,792,458 m/s.

Parameters: • n/a

Example:

```
>>> from cedargrove_unit_converter.velocity import velocity_of_light
>>> velocity_of_light()
299792458
```

helper_class velocity.velocity_of_sound(*medium="air"*)

Returns the constant value for the speed of sound in air, water, or steel. The value returned is in meters-per-second.

Parameters: • **medium** – The sound medium. Can be a string value in the range of “air”, “water”, or “steel”. Default value is “air”.

Example:

```
>>> from cedargrove_unit_converter.velocity import velocity_of_sound
>>> velocity_of_sound()
343

>>> velocity_of_sound(medium="air")
343

>>> velocity_of_sound(medium="water")
1481

>>> velocity_of_sound(medium="steel")
5120
```