

## Using Units in MATHCAD

### Example 1: Using units in calculations

distance := 25 m      Simply enter the unit after the variable (or MULTIPLY by the unit.)  
 Type the unit abbreviation or use Insert - Unit and pick the  
 desired  
 time := 13.3 sec      unit from a list. Note that you must use the exact unit symbol  
 specified by MathCAD.  
 velocity :=  $\frac{\text{distance}}{\text{time}}$   
 velocity = 1.88 m·sec<sup>-1</sup>      These units were added by MATHCAD.

### Example 2: Using units rather than performing conversions

Suppose that we want to find the sin of 30 degrees and the arctangent of 1 (in degrees)  
 Recall that trigonometric functions use radians by default unless other units are specified

Method 1: (using conversions)

$$\text{Result1} := \sin\left(30 \cdot \frac{\pi}{180}\right)$$

$$\text{Result1} = 0.5$$

$$\text{Angle1} := \frac{180}{\pi} \cdot \text{atan}(1)$$

$$\text{Angle1} = 45$$

Method 2: (using units - a better method)

$$\text{Result2} := \sin(30 \text{ deg})$$

$$\text{Result2} = 0.5$$

$$\text{Angle2} := \text{atan}(1)$$

$$\text{Angle2} = 0.785 \quad (\text{in radians by default})$$

$$\text{Angle2} = 45 \text{ deg}$$

Enter the unit into the "placeholder" that appears following the result.

### Example 3: Changing units (converting to other units)

Suppose that an answer calculated in MathCAD does not use the units that you desire. Simply change them! When you change the unit, the value will change as well.

Recall that trigonometric functions use radians by default unless other units are specified

Using the example above:

$$\text{velocity} = 1.88 \text{ m} \cdot \text{sec}^{-1}$$

$$\text{velocity} = 6.167 \text{ ft} \cdot \text{sec}^{-1}$$

$$\text{velocity} = 4.205 \text{ mph}$$

$$\text{velocity} = 74.004 \text{ in} \cdot \text{sec}^{-1}$$

$$\text{velocity} = 7.4 \cdot 10^3 \text{ yd} \cdot \text{hr}^{-1}$$

Note that in each case, the new unit was simply typed into the unit placeholder. MathCAD changed the value.