Units in Mathcad

Type * to add units: $c := 3 \cdot 10^8 \cdot \frac{m}{s}$

You can ask for the units using UnitsOf( ): $\text{UnitsOf}\left(c^3\right) = 1 \frac{m^3}{s^3}$

Mathcad knows the standard SI units: m, kg, s, A, K, cd, mole, coul, J
and many other units such as day, hr, yr, km, in, cm, yd, etc.

Example, you can enter: $m_e := 9.11 \cdot 10^{-31} \cdot kg$

You can define a new unit: $eV := 1.602 \cdot 10^{-19} \cdot J$

$furlong := 220 \cdot yd$ (Do not use plurals of units.)

$fortnight := 14 \cdot day$

And then you can find: $\frac{m_e \cdot c^2}{eV} = 511798$ The rest energy of an electron is 511 keV.

$\frac{furlong}{fortnight} = 1.663 \times 10^{-4} \frac{m}{s}$ A snail's pace.

To force Mathcad to display eV, click on the J and replace it with an eV. While you do this the numerical value will disappear. The correct numerical value will appear when you click outside the box.

eV was forced by typing eV: $m_e \cdot c^2 = 5.118 \times 10^5 eV$

Examples:
What is your average kinetic energy while running a 10 K race if you weigh 130 lb
and finish in 39 minutes?

$$\frac{1}{2} 130 \cdot lb \cdot \left(\frac{10 \cdot km}{39 \cdot min} \right)^2 = 538.452 \, J$$

How long is a week, in seconds? $7 \cdot day = 6.048 \times 10^5 s$

How far is a light-year, in inches? $\frac{1 \cdot yr \cdot c}{1 \cdot in} = 3.727 \times 10^{17}$ This is dimensionless, of course.

Try it: Show that you go less than 50 ft in a day traveling at a speed of a furlong per fortnight.

Try it: How many furlongs in a mile?

Try it: Which is larger, an acre or a hectare? (Neither is abbreviated in Mathcad.)

Be careful not to redefine units, for example: $m := 1.67 \cdot 10^{-27}$ will redefine the meter.

Then $m \cdot c^2 = 1.503 \times 10^{-10} \frac{m^2}{s^2}$ which is not what you expected.

A Sievert is a dose of radiation in Joules/kg, which reduces to m^2/s^2.
So Sv is not wrong, but it is not what you wanted.

$c^2 = 9 \times 10^{16} \frac{m^2}{s^2}$ Yields the same unexpected result.