

SolutionBase®

A few "every day" things.

Resistor Colour Code.

Colour	Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Grey	8
White	9

Some Multipliers:

Big numbers, little numbers: using exponential notation and their values etc.

A hint to help the forgetful. Both m and M are used below, with M the bigger of the two.

So if there is a duplicate, the capital is used for those values above 1.

Prefix	Symbol	Multiplication Factor - Exponential form	Multiplication Factor using lots of 0's.
terra	T	10^{12}	1,000,000,000,000.0
giga	G	10^9	1,000,000,000.0
mega	M	10^6	1,000,000.0
kilo	k	10^3	1,000.0
hecto	h	10^2	100.0
deca	da	10^1	10.0
-----	-----	10^0	1.0
deci	d	10^{-1}	0.1
centi	c	10^{-2}	0.01
milli	m	10^{-3}	0.001
micro	μ	10^{-6}	0.000001
nano	n	10^{-9}	0.000000001
pico	p	10^{-12}	0.000000000001
femto	f	10^{-15}	0.000000000000001
atto	a	10^{-18}	0.000000000000000001

Density of Atmospheric Air.

This can be helpful when working out Air-Conditioning flows and requirements.

A general figure is 1.2 kg / M³.

Space Loss for Microwaves.

The calculation below determines radiation loss only and assumes the aerial is isotropic^[1], thus the final value (loss) is obtained after including the aerial gain.

$$\text{Loss (dB)} = 32.5 + 20 \times \log_{10} D + 20 \times \log_{10} F.$$

Where:

D is Distance in Km (D > 1)

F is Frequency measured in MHz (F > 1)

So the above must be used for calculations of greater than 1 MHz at a Distance greater than 1 Km.

[1] Isotropic - an ideal antenna with unity gain (0dB). Its radiation is uniform in all directions (perfect omni directional).