APES SI Prefix Unit Conversion Revision Table ($10^{9} \rightarrow 10^{-9}$)

Name	Scientific Notation	Prefix Name	Prefix Letter
Billion	10^{9}	giga	G
Million	10^{6}	mega	M
Thousand	10^{3}	kilo	k
Hundredth	10^{-2}	centi	c
Thousandth	10^{-3}	milli	m
Millionth	10^{-6}	micro	μ
Billionth	10^{-9}	nano	n

Example 1: 67MW = 0.067GW = 67,000kW = 67,000,000W

Example 2: 12cm = 0.12m = 120mm

APES Chemical Formulas

Here are important chemical APES formulas to know:

Common Name	Chemical Equation
Respiration	$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$
Combustion	Hydrocarbons (C_xH_y) + $O_2 \rightarrow CO_2 + H_2O$
Photosynthesis	$6CO_2 + 6H_2O$ + sunlight $\rightarrow C_6H_{12}O_6 + 6O_2$
Ocean acidification	$CO_2 + H_2O \leftrightarrow H_2CO_3 \leftrightarrow H^+ + HCO_3^-$
Photochemical smog formation	NO_x + VOCs + heat + sunlight $\rightarrow$ smog
Stratospheric ozone depletion	$O_3 + Cl \rightarrow O_2 + ClO$

List of Mathematical Routines

Here are the important mathematical routines:

Common Name	Mathematical Formula
Population density	*Population* / *Area*
Rule of 70	70 / *Percent growth rate*
Population growth rate as a percent	*((Births - Deaths*) / *Number of people)* x 100
Rate of change	*(Final - Initial*) / (*Final time - Initial time)*
Percent change	*(Final - Initial)* / *Initial)* x 100
Net Primary Productivity (NPP)	*Gross primary productivity (GPP) - Respiration*
Gross Primary Productivity (GPP)	*GPP = Rate of photosynthesis by plants* *GPP can also be expressed as:* *GPP = Total solar energy captured by plants − Energy lost due to respiration by plants*
Fuel efficiency	*Distance traveled* / *Unit of fuel consumed*
The 10% Rule	*The 10% rule states that roughly only 10% of energy transfers between trophic levels in a food chain, with the rest being lost as heat.*
Dimensional Analysis	*Quantity 1 x (Conversion factor* / *Quantity 2) = Result*
Half-Life	$t_{½} = ln$ (2) / λ
LD_{50}	LD_{50} = *Dose* / *Weight*