

Measurement

I. Scientific Notation

: Numbers greater than 0 = positive exponent; Numbers less than 0 = negative exponents

: Multiplication Rule

(multiply coefficients; add exponents)

$$\text{Ex. } (3.0 \times 10^8 \text{ m/s}) \times (5.0 \times 10^2 \text{ s}) = 15 \times 10^{10} \text{ m} = 1.5 \times 10^{11} \text{ m}$$

: Division Rule

(divide coefficients; subtract exponents)

$$\text{Ex. } \frac{1.5 \times 10^{11} \text{ m}}{3.0 \times 10^8 \text{ m/s}} = \frac{1.5}{3.0} \times 10^{11-8} \text{ s} = 0.50 \times 10^3 \text{ s} = 5.0 \times 10^2 \text{ s}$$

II. SI Units Of Measurement

SI Base Units

<u>Quantity</u>	<u>Units</u>	<u>Symbol</u>
Length	meter	m
Mass	kilogram	kg
Temperature	kelvin	K
Time	second	s
Amount of substance	mole	mol
Electric current	ampere	A
Luminous intensity	candela	cd

Derived Units

<u>Quantity</u>	<u>Units</u>	<u>Symbol</u>
Area	square meter	m ²
Volume	cubic meter	m ³
Density	kilograms per cubic meter	kg / m ³
Pressure	pascal (kg/m * s ²)	Pa
Energy	joule (kg * m ² /s ²)	J
Frequency	hertz (1 / s)	Hz
Electric charge	coulomb (A * s)	C

III. Temperature Conversion

$$^{\circ}\text{C} = (5/9) * (^{\circ}\text{F} - 32^{\circ})$$

$$\text{Ex. : } 82^{\circ}\text{F} = (5/9) * (82^{\circ}\text{F} - 32^{\circ}) = (5/9) * (50^{\circ}) = 27.7^{\circ}\text{C}$$

$$^{\circ}\text{F} = (9/5)(^{\circ}\text{C}) + 32^{\circ}$$

$$\text{Ex. : } 27.7^{\circ}\text{C} = (9/5)(27.7^{\circ}\text{C}) + 32^{\circ} = 49.86^{\circ} + 32^{\circ} = 81.86^{\circ}\text{F}$$

$$\text{K} = ^{\circ}\text{C} + 273$$

$$\text{Ex. : } 27.7^{\circ}\text{C} = 27.7^{\circ}\text{C} + 273 = 300.7 \text{ K}$$