


# UNIT 2: MEASUREMENT

## Topics Covered:

- Qualitative and Quantitative
- Dimensional Analysis
- SI System
- Scientific Notation
- Significant Figures
- Density

# UNIT OBJECTIVES

- ❑ Use the SI system in taking and recording measurements in terms of significant figures, precision and accuracy
  - ❑ Understand temperature in terms of Kelvin and Celsius
  - ❑ Perform unit conversions including using scientific notation
  - ❑ Understand matter in terms of mass, volume and density
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# SCIENTIFIC NOTATION

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- Basic form:

a.  $3.57 \times 10^{-8}$

b.  $4.23 \times 10^{-2}$

c.  $75.3 \times 10^2$

d.  $2.92 \times 10^9$

e.  $0.000354 \times 10^4$

f.  $9.1 \times 10^4$

# SCIENTIFIC NOTATION

When the exponent is positive...

- 45,000,000,000,000,000 =
- $2.641 \times 10^{12} =$
- 25,310,000,000,000 =
- $3.215 \times 10^8 =$

# SCIENTIFIC NOTATION

When the exponent is negative...

- $0.000000000000000000378 =$
- $7.45 \times 10^{-8} =$
- $0.000000003018 =$
- $8.41 \times 10^{-7} =$

# SCIENTIFIC NOTATION

Multiplication

- $(4.6 \times 10^{34})(7.9 \times 10^{-21})$

# SCIENTIFIC NOTATION

Multiplication

- $(1.24 \times 10^{12})(3.31 \times 10^{20})$



# SCIENTIFIC NOTATION

Division

- $(8.4 \times 10^{-5}) \div (4.1 \times 10^{17})$

# SCIENTIFIC NOTATION

Division

- $(5.4 \times 10^{32}) \div (7.3 \times 10^{14})$

# SCIENTIFIC NOTATION

## Addition and Subtraction

- $(4.25 \times 10^{13}) + (2.10 \times 10^{14})$

# SCIENTIFIC NOTATION

## Addition and Subtraction

- $(6.4 \times 10^{-18}) - (3 \times 10^{-19})$

# SCIENTIFIC NOTATION

## Addition and Subtraction

- $(3.1 \times 10^{-34}) + (2.2 \times 10^{-33})$