

# SS Physics I

## Math Review

# Significant Figures

- Significant Figures (or sig figs, for short) represent a manner of showing which digits in a number are known to some level of certainty.
- How many significant figures are in the following values?
  - 0.0083
  - 40.7
  - 1.200

# Scientific Notation

- Start by showing all the significant figures in the number you're describing, with the decimal point after the first significant digit. Then, show your number being multiplied by 10 to the appropriate power in order to give you the correct value.

149 600 000 000 m

⇒  $1.496 \times 10^{11}$  m

# Metric System

- Physics involves the study, prediction, and analysis of real-world phenomena.
- The SI system is oftentimes referred to as the mks system, as the three most common measurement units are meters, kilograms, and seconds.
- In the "New SI", four of the SI base units – namely kilogram, ampere, kelvin and mole – have been redefined in terms of constants; the new definitions are based on fixed numerical values.

# Examples 1

- Read the following figures:
  - $10^3$  = one thousand = k (kilo)
  - $10^6$  = one million = M (Mega)
  - $10^9$  = one billion = G (Giga)
  - $10^{12}$  = one trillion = T (Tera)
  - 230 401
  - 10 043 000
  - 1 721 000 083

# Examples 2

- Read the following figures:
  - 3.14
  - 0.59
  - $3.315 \times 10^2$
  - $6.02 \times 10^{23}$
  - $5.29 \times 10^{-11} \text{ m}$
  - $9.11 \times 10^{-31} \text{ kg}$
  - $3.1557 \times 10^7 \text{ s}$
  - $2.99792458 \times 10^8 \text{ m/s}$

# Examples 3

- Read the following numbers, functions and symbols:

- $\frac{1}{2}$

- $\frac{1}{3}$

- $\frac{2}{3}$

- $\frac{5}{6}$

- $\frac{A}{B}$

- $A + B = C$

- $A^2$

- $A^3$

- $\sqrt{A}$

- $\frac{A \times (B + C)}{D}$

- $A \approx B$



# Vectors and Scalars

- The numbers, which have a magnitude (or size) only, are known as scalars.

Examples of scalars include quantities such as temperature, mass, and time.

- The quantities which have both a magnitude and direction are known as vectors.

Vector quantities you may be familiar with include force, velocity, and acceleration.