Sadiq Public School

Do the right, fear no man

Subject: Physics **Class: S2** **Day/ Date: Saturday (16th Nov, 2024)**

Lesson [Revision Chapter # 1] Types of units, Prefixes and Scientific notation.

A. **Inquiry:**

We studied about physical quantities in previous lesson. Do you remember which two common characteristics a physical quantity should possess?

Can you think of some methods of writing large numbers in a shortened way?

Do you know what prefixes are?

B. **Information:**

A physical quantity requires numerical magnitude and unit in which it is measured. Units are standards for measurement of physical quantities.

The international system of units: The eleventh General conference on weights and measures held at Paris in 1960. The conference agreed on adopting a world-wide system of measurements called international system of units. The international system of units is commonly referred as SI.

SI is a system of measurement based on 7 base units. These base units can be used in combination with each other, which creates SI derived units.

Unit: The fixed quantity taken as standard of reference for measuring other quantities of the same type is called unit.

Types of units:

Base Units: The units used to describe the base quantities are called Base units

Table 1: Base quantities and base units

Quantity		Unit	
Name	**Symbol**	**Name**	**Symbol**
Length	*l*	metre	m
Mass	*m*	kilogramme	kg
Time	*t*	second	s
Electric current	*I*	ampere	A
Intensity of light	*L*	candela	cd
Temperature	*T*	kelvin	K
Amount of a substance	*n*	mole	mol

Derived Units: the units used to measure the derived quantities are called Derived units

Table 2: Derived quantities and derived units

Quantity		Unit	
Name	Symbol	Name	Symbol
Speed	*v*	metre per second	ms^{-1}
Acceleration	*a*	metre per second per second	ms^{-2}
Volume	*V*	cubic metre	m^3
Force	*F*	newton	N or (kg m s^{-2})
Pressure	*P*	pascal	Pa or (N m^{-2})
Density	*ρ*	kilogramme per cubic metre	kg m^{-3}
Charge	*Q*	coulomb	C or (As)

Prefixes: Prefixes are the words or letters added before a unit and stands for multiple and sub multiples of that unit such as kilo, mega, giga and milli etc.

Some commonly used prefixes are:

Prefix	Symbol	Multiplier
exa	E	10^{18}
peta	P	10^{15}
tera	T	10^{12}
giga	G	10^{9}
mega	M	10^{6}
kilo	k	10^{3}
hecto	h	10^{2}
deca	da	10^{1}
deci	d	10^{-1}
centi	c	10^{-2}
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}
pico	p	10^{-12}
femto	f	10^{-15}
atto	a	10^{-18}

Scientific notation: A way to express a given number as a number between 1 and 10 multiplied by 10 having an appropriate power is called scientific notation or standard form.

For example, a number **62750** can be expressed as **$62.75x10^3$** or **$6.275x10^4$** or **$0.6275x10^5$**.

For detailed explanation read the textbook about **Types of units, Prefixes and Scientific notation** from (pages 5- 8)

C. Synthesising/ absorbing the information:

On your notebook,

- Define 'unit' and international system of units (SI).
- Define Base units and Derived units with examples?
- List some commonly used prefixes.
- What is meant by Scientific notation? Explain

D. Practising:

Use your knowledge about **Types of units, Prefixes and Scientific notation** and answer the following

- Quick Quiz from (page# 8)
- Problems 1.1 – 1.5 (page # 25)

E. Feedback

- Students if you have any questions at all about this topic (Types of units, Prefixes and Scientific notation) any words you didn't understand anything at all- please write these into the email to your teacher and he will reply ASAP

Class	Teachers' Names	Teachers' Abbreviations	Teachers' Email Addresses	Instructions
S2A	Muhammad Nadeem	MN	Nadeem_MN_sadiq@protonmail.com	S2A students will send their home assignments to their subject teacher (MN) for checking and getting feedback.
S2B	Muhammad Jahanzeb Ashraf	MJA	Jahanzeb_MJA_sadiq@protonmail.com	S2B students will send their home assignments to their subject teacher (MJA) for checking and getting feedback.
S2C	Muhammad Saleem Nawaz	MSN	Saleemnawaz_msn_sadiq@protonmail.com	S2C students will send their home assignments to their subject teacher (MSN) for checking and getting feedback.
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