

Physics: concerned with description and understanding of natural through measurements. • NOT
 Every measurements are expressed in units. some units referenced to human body. standard unit:
 officially accepted. system of units: group of standard units and their combination. ~ two major
 systems of units metric system British system «Engineering» it always possible to convert From one on
 one unit to another. Different units in the same system or units of Different system can be used to
 describe same thing 1.2 SI Units of Length, Mass, and Time 2 LEARNING PATH QUESTIONS – What is
 the difference between base and derived units? – How are the meter (m), the kilogram (kg), and the
 second (s) currently defined? • length, mass, time fundamental quantity mechanics require only these
 quantity • Length base quantity used to measure Distance or Dimensions. is space. • SI u
 nit of length is meter. • meter originally: 1/10000000 Distance from North pole to equator. • meter
 originally: the Distance between two marks on metal bar a platinum–iridium" • meter currently: path
 traveled by light in vacuum during 1/(speed) second. length standard referenced to time. LENGTH:
 Dunkit 3 • 1 m = distance traveled by light in a vacuum in 1/299 792 458 s كوا METER North Pole
 a mass base quantity 1330° 345° Barcelona 10 00 000 m5. 60° 30° ° 5 1 Equator (a) used to
 describe amount of matter the more massive object more matter is contain. SI unit of mass
 kilogram. • Kilogram originally: cube of water 10 cm side. • Kilogram currently: – mass of
 cylinder a platinum–iridium" ~ mass referenced to specific material standard. NOTE ~ in SI mass is
 base quantity in British weight is base quantity ~ Base quantities remain same 4 • time of the forward
 flow of events. ~ Time is four Dimension. SI unit of time second • second originally: Define by
 solar clock a day = 24 h = 1440 min = 86400 s • second currently: Define by "atomic clock" "C
 esium" (cesium – 133) One frequency oscillation Cesium–133 1 s = 9 192 631 770 oscillations (a
 tion detector • application length and time "GPS" position and location on earth. 5 • units •
 Base 7 units • Defined by Standard TABLE 1.1 The Seven Base Units of the SI • Derived 1 co
 mbination of base units. Name of Unit (abbreviation) Property Measured meter (m) length
 kilogram (kg) mass second (s) time ampere (A) electric current kelvin (K) temperature mole (mol)
 amount of substance candela (cd) luminous intensity Newton Joule pascal Watt DID YOU LEARN
 N? – Base units are defined by standards. Derived units are combinations of base units. ☞ The meter is
 defined in terms of the speed of light, the standard mass of 1 kg is associated with a platinum–iridium
 cylinder, (the only SI standard unit referenced to a material artifact), and the second is defined by the
 radiation frequency