

Key Concepts Ch. 1 (and beyond)

Planet Holloway Physics

Chapter 1 is concerned primarily with general science methods, beginning physics terms and measurements.

Edit this document to create your own study guide.

Term/concept	Definition/explanation
Systeme International d'Unites – SI units	used worldwide by scientists who wish to share and collaborate results easily.
Scientific Theory	An explanation based on many observations. Sometimes too hard to conduct actual single experiment or happened in the past.
Scientific Law	A rule regarding how nature works. Allows predictions of what will happen. Has been tested repeatedly but not disproven
Precision	The ability to repeat results over and over without variance
Accuracy	The degree to which the experimental or recorded value is close to the actual value. Typically a measure of the ability of the instrument used to measure (ie. +/- 0.02).
Independent variable	The factor that is changed in an experiment to determine what effect it has. Generally, this is what you control in the experiment.
Dependent variable	The factor that changes due to changes in the independent variable. Generally, these are the results you record within your experiment
Linear relationship	Math relationship between two variables that can be describe by the equation $y = mx + b$. On a graph, the function is a straight line.
Nonlinear relationship	Math relationship that does not look straight on a graph (duh)
Quadratic relationship	Math relationship that can be described by the equation $y = ax^2 + bx + c$. On a graph, the function describes a parabola.
Inverse relationship	Math relationship that can be described by the equation $y = a/x$. On a graph, a hyperbola is the resulting shape.
Dimensional Analysis (conversion of units)	Dimensions can be treated as algebraic quantities. The method of converting from one unit of measure to another using a conversion factor based on an equivalence between the two units involved.
Cartesian Coordinate System	A system of breaking position into points along different axes, most commonly the x, y and z axes. (ie. 3, 4 - 3 units in the x, and 4 units in the y)
Order-of-magnitude	An approximate value that looks at the closest power of ten. (ie. 780 kg is on

the order of 10^3 kg

Significant figures The number of digits that determine the reliability of a measurement. (ie. 0.0030 has two significant figures). Understand how to add, multiply and identify measurements using significant figures.

Quarks There are six varieties of quarks that make up protons, neutrons and electrons.

kilo

milli

Kilogram vs. pound

Meter vs. feet

Cubic meters vs. liters

Soh-Cah-Toa (Trig)

Engineering process I like this version. [http://www.sciencebuddies.org/engineering-design-process/engineering-design-process-steps.shtml - theengineeringdesignprocess](http://www.sciencebuddies.org/engineering-design-process/engineering-design-process-steps.shtml-theengineeringdesignprocess)

Graphs X vs. t, v vs. t, and a vs. t These are the three main motion graphs we will use in detail

vector

Speed vs. velocity

Velocity vs. acceleration

Types of motion Linear, curved or circular, accelerated, rotational, orbital

Temperature Measured in Kelvin (K) or sometimes degrees celcius ($^{\circ}\text{C}$)

These are not all the items you are responsible for, but the vast majority of what you will be tested on is contained on this sheet. Learn what the terms mean and how they are used in physics and/or in science.