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.

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| --- | --- |
| Term/concept | **Definition/explanation** |
| Systeme International d’Unites – SI units | used worldwide by scientists who wish to share and collaborate results easily. |
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| Scientific Theory | An explanation based on many observations. Sometimes to hard to conduct actual single experiment or happened in the past. |
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| Scientific Law | A rule regarding how nature works. Allows predictions of what will happen. Has been tested repeatedly but not disproven |
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| 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). |
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| 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 |
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| 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. |
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| Nonlinear relationship | Math relationship that does not look straight on a graph (duh) |
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| Quadratic relationship | Math relationship that can be described by the equation  y = ax2 + bx +c . On a graph, the function describes a parabola. |
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| Inverse relationship | Math relationship that can be described by the equation y = a/x. On a graph, a hyperbola is the resulting shape. |
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| 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. |
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| 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) |
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| Order-of-magnitude | An approximate value that looks at the closest power of ten. (ie. 780 kg is on the order of 103 kg |
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| 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. |
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| 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 |
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| Temperature | Measured in Kelvin (K) or sometimes degrees celcius (°C) |
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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.