VCE Physics - Defining variables

Defining variables

The table identifies types of variables that apply to VCE Physics.

|  |  |
| --- | --- |
| **Type of variable** | **Definitions** |
| Categorical | Categorical variables are qualitative variables that describe a quality or characteristic typically addressing ‘what type?’ or ‘which category?’. They are generally represented by non-numeric values and may be further classified as ordinal or nominal.   * Ordinal variables can take values that can be logically ordered or ranked; for example, order of the planets in the Solar System from the Sun (1st, 2nd, 3rd), degree of satisfaction with a new gadget (small, medium, large) and attitudes (strongly agree, agree, disagree, strongly disagree). * Nominal variables can take values that cannot be organised in a logical sequence; for example, gender, colour and type of sub-atomic particle.   Bar charts and pie graphs are used to graph categorical data. |
| Numerical | Numerical variables are quantitative variables that describe a measurable quantity as a number, typically addressing ‘how many?’ or ‘how much?’. They are further classified as continuous or discrete.   * **Continuous variables** can take any value between a certain set of real numbers; for example, distance (2.85 kilometres), length (12.5 seconds) or temperature (25.4 °C). * **Discrete variables** can take a value based on a count from a set of distinct whole values and cannot take the value of a fraction between one value and the next closest value; for example, number of stars in the solar system or number of electrons in an atom.   Scatter plots and line graphs are used to graph numerical data. |
| Independent | An independent variable is the variable for which quantities are manipulated (selected or changed) by the experimenter, and assumed to have a direct effect on the dependent variable. Independent variables are plotted on the horizontal axis of graphs. |
| Dependent | A dependent variable is the variable the experimenter measures, after selecting the independent variable that is assumed to affect the dependent variable. Dependent variables are plotted on the vertical axis of graphs. |
| Controlled | A controlled variable is a variable that has been held constant in an experiment to test the relationship between the independent and dependent variables. |