
Glossary

acceleration	the rate of change of velocity with time
accuracy	describes how close a measurement is to a known or accepted value
age-structure diagram	a graphical representation of the distribution of ages within a population
alternative hypothesis	one of several hypotheses that experimental observations are the result of some nonrandom cause
angular acceleration	the rate at which the angular velocity changes as a result of an applied torque
angular momentum	a measure of the rotation of an object; it is the product of the object's angular velocity and its moment of inertia
best-fit line	also called a trend line; a straight line drawn on a scatter plot that indicates the pattern of the data; typically has approximately the same number of data points above and below the line
buoyant force	a force due to a fluid's pressure difference acting on an object in contact with or completely submerged within a fluid
capacitor	an electrical device that stores both charge and energy
carrying capacity	the maximum population size that can be supported by a particular environment at a certain point in time without disruption to the habitat
centripetal acceleration	the acceleration of an object in a circular motion that is directed radially toward the center of the circle
chemical equilibrium	the dynamic state of a chemical reaction when the concentration of reactants and products is constant over time; the rates of the forward and backwards reactions are the same
chi-square test	a statistical method that is used to determine if there is a significant relationship between two groups of data
coefficient of determination	the r^2 value of a line of regression that indicates how well a proposed model fits the data
confidence interval	a range of values within which the true value of the population has a probability of being
current	the rate of charge moving past a given point in a conductor
dependent variable	also called the response or experimental variable; the response to the independent variable in an experiment; what is measured by the researcher
dilution	a less concentrated chemical or solution

dimensional analysis	also called the factor-label method; a method of converting one unit of measure to another using conversion factors and rules of algebra
dose-response curve	a graphical illustration of the dose of a drug and its effect on the sample group
dot product	also called the scalar product; the product that takes two vectors and performs an operation where the product's value is a scalar value
electromagnetic radiation	how energy travels through spaces as waves
electromotive force	also called emf; the electric current produced by a difference in electric potential
electric field	the vector field that surrounds a charged particle
energy	the ability for an object or system to do work or produce heat
enthalpy	the thermodynamic quantity that measures the heat of a system
entropy	the thermodynamic quantity that measures the disorder of a system
experimental error	an error that occurs while performing an experiment
exponential function	a function in the form $y = ax^2 + bx + c$, where A and b are arbitrary constants
exponential growth	occurs when populations grow at a constant rate; usually shown by a J-shaped growth curve
factor-label method	also called dimensional analysis; a method of converting one unit of measure to another using conversion factors and rules of algebra
flux	the magnitude of a vector field that permeates space through a particular defined area
force	the movement of an object (i.e., the push or pull) that results from its interaction with another object
free energy	the energy that is available to do work in a system
frequency	the number of waves that pass through a specific point in space per second
fundamental units	the basic units of length, mass, and time
gross primary productivity (GPP)	the rate at which plants convert solar energy into chemical energy (organic compounds)
half-life	the time it takes for 50% of the substance to decay
Hardy–Weinberg theorem	the allele frequencies of a gene (at a specific locus) in a population will stay the same from one generation to the next as long as the following requirements are met: (1) no mutations occur, (2) no movement into or out of the population occurs, (3) the population is large, (4) mating is random, and (5) no natural selection occurs

impulse	a measure of the amount of force exerted on an object with time
independent variable	also called the explanatory or controlled variable; the variable that the researcher controls; it is not changed by other variable(s) measured in an experiment
kinetic energy	energy of movement
kinetic friction	when the two surfaces in contact are in relative motion to each other
lethal dose	the dose of a drug that causes death
limiting reactant	the reactant that is completely consumed at the end of a chemical reaction
logistic growth	occurs when populations grow steadily until the carrying capacity of the habitat is reached; usually shown by an S-shaped growth curve
magnetic flux	the magnitude of the magnetic field that permeates space through a particular defined area
magnification	an increase in the size of an image
maximum	the data point in a set of data with the highest numerical value
mean	the average of a set of data
median	the middle number in an ordered set of data; when there is an even number of data points, the median is the average of the two middle numbers
minimum	the data point in a set of data with the lowest numerical value
momentum	a measure of the amount of mass that is in motion
net primary productivity (NPP)	the energy in the organic compounds left over for consumers after the primary producers meet their own needs through cellular respiration
normal distribution	also known as a bell curve; in science, normal distributions apply to repeated measurements of a single value
null hypothesis	the hypothesis that there is no difference between two groups of data in an investigation and that the experimental observations are the result of chance
photon	a particle of light
power	the rate at which energy is transferred to a system or object or transformed within a system
precision	how close several measurements are to each other; the closer measured values are to each other, the higher their precision
pressure	a measure of the magnitude of normal force per unit area exerted by a fluid or a gas

pressure potential	the component of water potential that is a result of the pressure of the cell wall on the water inside a cell; it generally has a positive effect on water potential and causes water potential to increase
primary productivity	the rate at which organic compounds are stored
quadratic function	a function in the form $y = ax^2 + bx + c$, where a , b , and c are constants
qualitative data	data that is observed rather than measured; e.g., observations of appearance, behaviors, smell, taste, etc.
quantitative data	data that is measured and recorded in numerical form; e.g., absorbance, size, time, height, and mass
quartile	a value that divides a data set into quarters; one fourth of a data set
random errors	unpredictable errors that occur during an experiment
refraction	the bending of light as it moves from one optical medium to another
regression analysis	a curve-fitting procedure used to fit data to a mathematical model when the data do not follow a linear pattern
resistance	the obstruction to the flow of charge
rotational inertia	qualitatively defined as the measurement of inertia of an extended body (system) in response to a torque acting on the system; formally named the moment of inertia, represented by the symbol I
rotational kinetic energy	the energy of an object or extended body rotating about an axis
rule of 70	a method of determining how long it takes for a population to double in size
scientific notation	an expression of a number that is too small or too large to be written as a decimal; the number is written as a coefficient multiplied by the base 10 raised to an exponent
significant digits	also called significant figures; the digits in a measurement or a calculation that are meaningful
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simple harmonic motion	occurs when an object is subjected to a linear restoring force, such as a force exerted by a spring on an object
solute potential	the component of water potential that is a result of the concentration of solute in a cell; high solute potential generally has a negative effect on water potential and causes water potential to decrease
survivorship curves	graphs that show the relative survival rates of a cohort of organisms at different ages; three types of survivorship curves: type I, type II, and type III
specific heat capacity	the amount of heat required to change the temperature of 1 gram of the material by 1 K

standard deviation	a tool for measuring the spread, or variance, in a sample population; provides an estimate of the variation in the entire sample set; a large sample standard deviation indicates that the data have a lot of variability; a small sample standard deviation indicates that the data are clustered close to the sample mean and do not have much variability
standard error	a statistic that allows a researcher to make an inference about how well the sample mean of a data set matches up to the true mean of the population
static friction	occurs when the two surfaces in contact are not in relative motion to each other
stock solution	a concentrated solution that is diluted
systematic errors	experimental errors that occur every time a particular measurement is taken
threshold level of toxicity	the lowest concentration of a drug that elicits toxic effects
torque	the force that causes an object to rotate
trend line	also called a best-fit line; a straight line drawn on a scatter plot that indicates the pattern of the data; typically has approximately the same number of data points above and below the line
vector	mathematical representations that show the direction and magnitude of certain physical quantities
velocity	the rate of change of position with time
water potential	the tendency of water to move by osmosis from one area to another; influenced by pressure potential and solute potential
wavelength	the distance between two consecutive peaks (or troughs) of a wave
work	force that acts over a distance
x-axis	the horizontal axis of a graph; denotes the independent variable
y-axis	the vertical axis of a graph; denotes the dependent variable
