Combined Higher Formulas **<u>(Underline means given in the paper)</u>**	
Biology Paper 1	Magnification = size of image / size of object
	Volume of cube = length x length x length Surface area = 6 x length x length Ratio = Surface area /volume
	Percentage change = (change / original) x 100%
	Heart rate = number of beats / number of minutes
	Breathing rate = number of breaths / number of minutes
Biology Paper 2	Probably = number of desired outcomes / total possible outcomes
Chemistry Paper 1	Atomic number = Number of protons (also number of electrons in an atom) Mass Number = Number of protons + number of neutrons Group number = number of electrons in last shell Period number = number of electron shells Overall charge = number of protons – number of electrons
	$$Relative\ atomic\ mass = \frac{(mass_1 \times abundance_1) + (mass_1 \times abundance_1) + \cdots}{Total\ abundance}$$
	Relative formula mass (molar mass) = sum of relative atomic mass of all atoms in chemical formula
	Conservation of Mass: Total mass of reactants before reaction = Total mass of products after reaction
	Mole = mass / molar mass
	Number of particles = mole x Avogadro's constant Avogadro's Constant = 6.02×10^{23}
	Concentration = mass / volume
	Energy change = Bond enthalpy of reactants – Bond enthalpy of products
Chemistry Paper 2	Rate of reaction = amount of reactant used or a amount of product formed / time taken
	Rate of reaction at a given point on a reaction curve = gradient = difference in y / difference in x
	General formula for alkanes: C_nH_{2n+2}, where n is the number of carbon atoms

Physics Paper 1	Kinetic energy = 0.5 x mass x velocity^2
	Elastic potential energy = 0.5 x spring constant x extension^2
	Gravitational potential energy = mass x gravitational field strength x height
	Thermal Energy = mass x specific heat capacity x temperature change
	Energy for change in state = mass x specific latent heat
	Charge (coulomb) = current (ampere) x time (second)
	Voltage = current x resistance
	Electrical Power = Voltage x Current Electrical Power = Current^2 x Resistance
	Electrical energy transferred = Voltage x Charge Electrical energy transferred = Electrical Power x time
	Density = Mass / Volume
	Pressure for a fixed mass of gas held at a constant temperature: Density x Volume = constant
Physics Paper 2	Weight = Mass x Gravitational Field Strength
	Work Done = Force x Distance
	Force = String Constant x Extension
	Work Done in stretching/ compressing spring = Elastic potential energy = 0.5 x spring constant x Extension^2
	Distance = Velocity x Time
	Acceleration = Change in Velocity x Time = (Final velocity – Initial Velocity) / Time
	Final Velocity^2 – Initial Velocity^2 = 2 x Acceleration x Distance
	For a distance-time graph, the gradient =speed Gradient = Change in y / Change in x
	For a velocity-time graph, the gradient = acceleration and area underneath the line is distance Gradient = Change in Y/ Change in X Area of Rectangle = Width x Height Area of Triangle = 0.5 x width x Height
	Force = Mass x Acceleration
	Force = Mass x Change in Velocity / Time taken
	Momentum = Mass x Velocity Momentum before Collision = Momentum after Collision
	Wave speed = Frequency x Wavelength
	Time Period = 1 / Frequency
	Force on a conductor (at right angles to a magnetic field) carrying a current = Magnetic flux density x current x length