PLC for AS Physics for term 2.

1. Forces and Motion

Be able to use the equation ΣF = ma, and understand how to use this equation in situations where m is constant	Red	Amber	Green
Be able to use the equations for gravitational field strength mg= F/M and weight W = mg	Red	Amber	Green
Know and understand Newton's third law of motion and know the properties of pairs of forces in an interaction between two bodies	Red	Amber	Green
Understand that momentum is defined as p = mv	Red	Amber	Green
Know the principle of conservation of linear momentum, understand how to relate this to Newton's laws of motion and understand how to apply this to problems in one dimension	Red	Amber	Green
Be able to use the equation for the moment of a force, moment of force = Fx where x is the perpendicular distance between the line of action of the force and the axis of rotation	Red	Amber	Green
Be able to use the concept of centre of gravity of an extended body and apply the principle of moments to an extended body in equilibrium	Red	Amber	Green
Be able to use the equation for work ΔW = FΔs, including calculations when the force is not along the line of motion	Red	Amber	Green

2. Energy, Power and Work Done

Be able to use the equation Ek=1/2MV2 for the kinetic energy of a body	Red	Amber	Green
Be able to use the equation ΔEgrav = mgΔh for the difference in gravitational potential energy near the Earth's surface	Red	Amber	Green
Know, and understand how to apply, the principle of conservation of energy including use of work done, gravitational potential energy and kinetic energy	Red	Amber	Green
Be able to use the equations relating power, time and energy transferred or work done P=E/t and P=W/t	Red	Amber	Green
Be able to use the equations efficiency-useful energy output/total energy input and efficiency = useful power output/total power input	Red	Amber	Green

Electric Circuits

3. Resistance

Understand that electric current is the rate of flow of charged particles and be able to use the equation I=ΔQ/Δt	Red	Amber	Green
Understand how to use the equation V= W/Q	Red	Amber	Green

Understand that resistance is defined by R=V/I and that Ohm's law is a special case when I ∝ V for constant temperature	Red	Amber	Green
Understand how the distribution of current in a circuit is a consequence of charge conservation	Red	Amber	Green
Understand how the distribution of potential differences in a circuit is a consequence of energy conservation	Red	Amber	Green
Be able to derive the equations for combining resistances in series and parallel using the principles of charge and energy conservation, and be able to use these equations	Red	Amber	Green
Be able to use the equations P=VI, W=Vit, and be able to derive and use related equations, E.g. P=I2R and P=V2/R	Red	Amber	Green
Understand how to sketch, recognise and interpret current-potential difference graphs for components, including ohmic conductors, filament bulbs, thermistors and diodes	Red	Amber	Green