

Blue Pathway								
Purple Pathway								
Orange Pathway								
	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12
AO1 Remember	Explain balanced and unbalanced forces	Explain stopping times for vehicles	Differentiate between scalars and vectors	Recall & apply Newton's second law	Explain work done and changes of energy on deformation	Explain and calculate the difference between mass and weight	Explain inertial mass and apply all of Newton's Laws	Always use appropriate and accurate scientific language and the correct SI units
	Explain ways to reduce drag forces	Explain force multipliers		Explain factors affecting braking distance	Explain and calculate momentum	Link Newton's Laws to zero and non-zero resultants	Relate work done to concept of energy transfer	
	Describe levers. Define a moment.	Describe how pressure changes in a fluid	Draw free-body diagrams	State Newton's third law	Explain gears, lever and moments	Relate ideas about forces, kinetic energy and road safety.	Explain and apply the conservation of momentum in collisions	
AO2 Application	Calculate average speed	Interpret distance-time graphs	Interpret distance-time graphs to calculate speed	Interpret & explain velocity-time graphs	Represent vectors with arrows and calculate resultant force	Interpret a complex journey on a graph of motion.	Combine vector quantities	Use tangents and area of graphs where appropriate
				Interpret resultant forces to predict motion			Calculate braking distance using stopping distances and energy transfers	Determine components of a force
	Consistently use equations in calculations.	Calculate resultant force	Calculate work done	Apply equation for uniform motion	Apply & rearrange force calculations	Rearrange equation for uniform motion	Calculate pressure at any depth and explain atmospheric pressure	Carry out multi-step calculations relating to velocity and acceleration
	Use equations of motion	Calculate moments	Calculate resultant moments	Calculate pressure and explain its changes				
AO3 Analyse and Evaluate	Recognise anomalous results and spot some causes of error in experimental procedures.	Write reasoned explanations of a conclusion based on the experimental data	Identify some causes of error and uncertainty in data or experimental procedures.	Apply Hooke's Law and distinguish between linear and non-linear relationships	Evaluate the reliability of methods in detail	Identify causes of error and uncertainty in data or experimental procedures.	Suggest detailed improvement to methods where reliability may be a concern	Use evidence from elastic potential energy to explain spring behaviour
								Critically evaluate and refine methodologies
AO3 Experimental Procedures	Carry out an experiment to investigate linear acceleration	Accurately make and record observations and measurements	Describe the method for investigating linear acceleration	Interpret data & use calculations to draw conclusions from linear acceleration investigation	Make quantitative predictions using scientific knowledge & understanding	Plan valid and reliable experimental methods to test a hypothesis.	Justify the choice of experimental methods and apparatus	Plan, justify, and carry out a safe, reliable and valid investigation to test a hypothesis
	Identify variables in an investigation	Carry out an experiment to investigate Hooke's law	Describe a method for investigating Hooke's law		Draw graphs to demonstrate elastic limit of a spring		Explain accuracy, precision, resolution and reliability	