GCSE Checklist – Forces & Motion (Triple)

	Got it?	Page(s)
Define Newton's First Law in terms of a stationary object		
Define Newton's First Law in terms of an object that is moving		
Apply Newton's First Law to explain the motion of objects moving with uniform velocity and objects where the speed/velocity changes		
Define Inertia		
Define Newton's Second Law in words		
Use $F = ma$; define all symbols and units		
HT ONLY define inertial mass		
Required practical 7: Investigate the effect of varying the force on the acceleration on an object of constant mass; investigate the effect of varying mass of an object on the acceleration produced by a constant force		
Define Newton's Third Law		
Apply Newton's Third Law to examples of equilibrium situations		
Describe the difference between distance and displacement; express displacement in terms of magnitude and direction		
Recall typical speeds for a person walking, running, cycling and for different types of transportation systems; recall a typical value for the speed of sound in air		
Make measurements of distance and time; recall and use $s = vt$; define all terms and standard units.		
Describe the differences between speed and velocity		
HT ONLY Explain, with examples, that motion in a circle involves constant speed but changing velocity		
Describe how to find a speed from a distance-time graph; draw distance-time graphs from measurements; interpret lines and slopes		
HT ONLY find the speed of an accelerating object from a distance-time graph using a tangent and gradient		

Recall and use $a = \frac{\Delta v}{t}$; define all terms and standard units.		
Describe how to find a acceleration from a velocity-time graph; draw velocity-time graphs from measurements; interpret lines and slopes		
HT ONLY interpret enclosed areas in velocity-time graphs; measure the area under a velocity-time graphs by counting squares		
Use $v^2 - u^2 = 2as$, define all terms and standard units		
Know that objects near Earth's surface falling freely accelerate at about $9.8\ m/s^2$; describe in reality why the resultant force on a falling object eventually reaches zero as it reaches its terminal velocity		
PHYSICS ONLY draw and interpret velocity-time graphs for terminal velocity; interpret the changing motion in terms of forces acting		
State the relationship between stopping distance, braking distance and thinking distance		
Explain the factors which affect the distance required for road vehicles to come to a stop in emergencies; estimate how the distance required to stop varies over a range of typical speeds		
PHYSICS ONLY Interpret graphs relating speed to stopping distance for a range of vehicles		
State a typical human reaction time; explain, interpret and evaluate methods used to measure different reaction times		
Describe the energy transfers during emergency stops; relate the work done by the brakes to the kinetic energy of the vehicle		
HT ONLY recall and use $p = mv$; define all terms and standard units		
HT ONLY describe the conservation of momentum; use the concept of momentum as a model and explain examples of momentum in an event such as a collision		
PHYSICS ONLY complete calculations involving an event, such as the collision of two objects		
PHYSICS ONLY combine $F = ma$ and $a = \frac{v-u}{t}$ to give $F = \frac{m\Delta v}{t}$, where $m\Delta v$ is the change in momentum; know that force equals the rate of change of momentum		
PHYSICS ONLY explain safety features such as air bags, seat belts, crash mats, cycle helmets and cushioned surfaces with reference to the concept of rate of change of momentum		