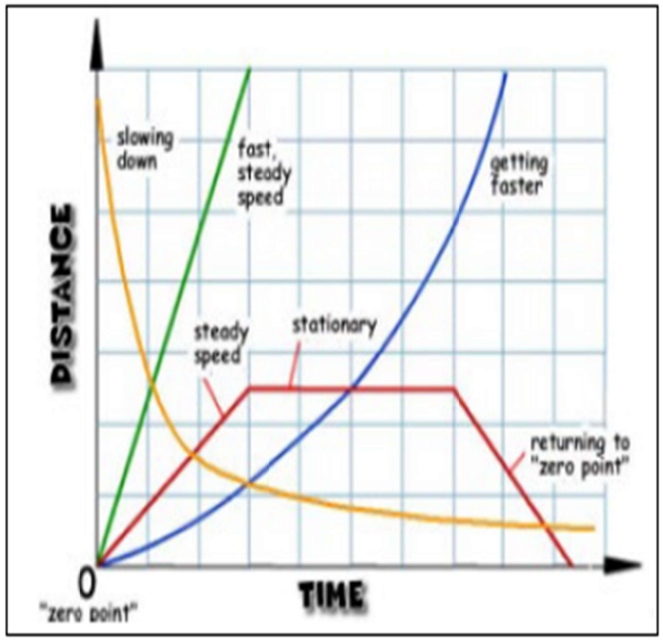
KNOWLEDGE ORGANISER

Motion-time graphs | Acceleration | Newton's Laws | Braking forces

Motion graphs	
Distance time graph for a stationary object	Horizontal line
Distance-time graph for an object at a steady speed	Straight line sloping upwards
Distance-time graph gradient	Equals the speed
Velocity-time graph for an object at a steady speed	Horizontal line
Velocity-time graph for an accelerating object	Straight line sloping upwards
Velocity-time graph for a decelerating object	Straight line sloping downwards
Velocity-time graph gradient	Equals the acceleration



Braking	
Thinking distance	The distance travelled as the driver reacts
Braking distance	The distance travelled as the driver applies the brakes
Stopping distance	Thinking distance + Braking distance
Braking distance increases with	Higher speed, higher mass, poor weather, poor vehicle conditions
Thinking distance increases with	Higher speed, drink, drugs, distractions

Newton's Laws	
Newton's 1st Law	If an object experiences zero resultant force it does not accelerate
Newton's 2nd law	The resultant force equals the mass x acceleration
The greater the resultant force	The greater the acceleration
The greater the mass	The smaller the acceleration for a given force
Forces	Occur in pairs of the same type
Newton's 3rd law	If object A exerts a force on object B, then object B exerts a force of equal magnitude and opposite direction on object A
When brakes are applied	Friction does work
When brakes are applied	The kinetic energy store of the wheels decreases and the thermal energy store of the brakes increases.
Force = mass ÷ acceleration (F = m x a)	