P2 Topic 4 Revision tracker

PHYSICS

Learning objectives I can:	I can do this very well	I can do this quite well	I need to do more work on this
4.1 Recall that the stopping distance of a vehicle is made up of the sum of the thinking distance and the braking distance			
4.2 Demonstrate an understanding of the factors affecting the stopping distance of a vehicle, including **a** the mass of the vehicle			
b the speed of the vehicle			
c the driver's reaction time			
d the state of the vehicle's brakes			
e the state of the road			
f the amount of friction between the tyre and the road surface			
HSW 13 Explain how and why decisions about uses of science and technology are made			
4.3 Investigate the forces required to slide blocks along different surfaces, with differing amounts of friction			
4.4 Use the equation: momentum = mass × velocity (kilogram metre per second, kg m/s) (kilogram, kg) (metre per second, m/s) to calculate the momentum of a moving object			
4.5 Demonstrate an understanding of momentum as a vector quantity			
4.6 Demonstrate an understanding of the idea of linear momentum conservation			
HSW 10 Use qualitative and quantitative approaches when presenting scientific ideas and arguments, and recording observations			
4.8 Investigate how crumple zones can be used to reduce the forces in collisions			
4.7 Demonstrate an understanding of the idea of rate of change of momentum to explain protective features including bubble wraps, seat belts, crumple zones and air bags			
H 4.9 Use the equation: force (newton, N) = change in momentum / time (kilogram metre per second, kg m/s) / (second, s) $F = \frac{(mv - mu)}{t}$ to calculate the change in momentum of a system, as in 4.6			
HSW 5 Plan to test a scientific idea, answer a scientific question, or solve a scientific problem by controlling relevant variables			
4.10 Use the equation: work done = force × distance moved in the direction of the force (joule, J) (newton, N) (metre, m) $E = F \times d$			
4.11 Demonstrate an understanding that energy transferred (joule, J) = work done (joule, J)			
4.12 Recall that power is the rate of doing work and is measured in watts, W			
4.13 Use the equation: power (watt, W) = work done (joule, J)			

time taken (second, s) ***P*** = ***E*** / ***t***			
4.14 Recall that one watt is equal to one joule per second, J/s			
H **4.18** Carry out calculations on work done to show the dependence of braking distance for a vehicle on initial velocity squared (work done to bring a vehicle to rest equals its initial kinetic energy)			
4.15 Use the equation: gravitational potential energy (joule, J) = mass (kilogram, kg) × gravitational field strength (newton per kilogram, N/kg) × vertical height (metre, m) GPE = ***m*** × ***g*** × ***h***			
4.16 Use the equation: kinetic energy (joule, J) = ½ × mass (kilogram, kg) × velocity^2 (metre/second)^2, (m/s)^2) KE = ½ × ***m*** × ***v***^{2}			
4.17 Demonstrate an understanding of the idea of conservation of energy in various energy transfers			
H **4.18** Carry out calculations on work done to show the dependence on braking distance for a vehicle on initial velocity squared (work done to bring a vehicle to rest equals its initial kinetic energy)			
HSW 11 Present information using scientific conventions and symbols			