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| **Before** | **Objectives** | **After** |
|  | **119 Recall** that the condition for simple harmonic motion is *F* = -*kx*, and hence **identify** situations in which simpleharmonic motion will occur. |  |
|  | **120 Recognise** and **use** the expressions *a* = - *ω2x*, *a* = -*A ω2*cos *ωt*, *v* = *Aω* sin *ωt*, *x* = *A*cos *ωt* and *T* = 1/*f* = 2π/*ω* as **applied**to a simple harmonic oscillator. |  |
|  | **121 Obtain** a displacement – time graph for an oscillating object and **recognise** that the gradient at a point gives the velocity at that point. |  |
|  | **122 Recall** that the total energy of an undamped simple harmonic system remains constant and **recognise** and **use** expressions for total energy of an oscillator. |  |
|  | **123 Distinguish** between free, damped and forced oscillations. |  |
|  | **124 Investigate** and **recall** how the amplitude of a forced oscillation changes at and around the natural frequency of a system and **describe**, **qualitatively**, how damping affects resonance. |  |
|  | **125 Explain** how damping and the plastic deformation of ductile materials reduce the amplitude of oscillation. |  |