3 A car of mass 1400 kg travelling on a straight horizontal road accelerates uniformly from a speed of $15\,m\,s^{-1}$ to $20\,m\,s^{-1}$ over a distance of 175 m.

(a) Find the time taken to travel the 175 m. [2]

.....

.....

.....

.....

There is a constant resistance force of 800 N to the motion of the car.

(b) (i) Use an energy method throughout to find the average power of the car's engine as the speed increases from $15\,m\,s^{-1}$ to $20\,m\,s^{-1}$. [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(ii) Find the steady speed that the car could maintain on the horizontal road if the engine is working at the power found in **(b)(i)**. [2]

.....

.....

.....

.....