1. A car of mass 1000 kg is cruising at 120 kmhr. At this velocity the drag and friction forces that the engine needs to work against is equivalent to 450 N.

Q Calculate the kinetic energy of the car when cruising at 120 kmhr.

Give your answer in Joules.

$m = 10^3\ kg$ $v = 120\frac{km}{hr} = 33.3\frac{m}{s}$ $F = 450\ N$	*Solution.* The kinetic energy of an object, which has a mass m and moves with the speed v is $\boxed{E = \frac{mv^2}{2}}$.
$E - ?$	Let check the dimension: $[E] = kg \cdot \left(\frac{m}{s}\right)^2 = N \cdot m = J$.

Let evaluate the quantity: $E = \frac{10^3 \cdot 33.3^2}{2} = 5.54 \cdot 10^5\ (J)$.

Answer: $5.54 \cdot 10^5$ Joules.