

Answer on Question 63498, Physics, Mechanics

Question:

A car travelling at a speed of 60 m/s has 5040000 J of kinetic energy. Determine the mass of the car.

Solution:

By the definition of the kinetic energy we have:

$$KE = \frac{1}{2}mv^2,$$

here, v is the speed of the car, m is the mass of the car.

From this formula we can find the mass of the car:

$$m = \frac{2KE}{v^2} = \frac{2 \cdot 5040000 \text{ J}}{\left(60 \frac{\text{m}}{\text{s}}\right)^2} = 2800 \text{ kg}.$$

Answer:

$$m = 2800 \text{ kg}.$$