Question #30155

two bodies of mass 3kg and 4 kg respectively are acted upon by 10N of force.what is the change in momentum if force acts for 2 seconds?

Solution:

The momentum (change in momentum) of the body is:

$\boldsymbol{P = mv}$, were m is the mass v is the velocity of the body

The velocity on equally accelerated motion is:

$v = at$ were a is the acceleration

According to the second Newton's law:

$a = \frac{F}{m}$ were F is the force

=>

$P = m * \frac{F}{m} * t$

=>

$\boldsymbol{P = Ft}$, were $\boldsymbol{F}$ is the force $\boldsymbol{t}$ is the time of force acting.

$P = 10 * 2 = 20\ Kgmsec^{-1}$

Answer: the change in momentum of each body is 20 Kgmsec^{-1}.