

Answer on Question #41240, Physics, Mechanics | Kinematics | Dynamics

An impulse is supplied to a moving object with the force at an angle of 120° with the velocity vector. What is the angle between the impulse and change in momentum?

(1) 0° (2) 30° (3) 60° (4) 120°

Solution:

The product of average force and the time it is exerted is called the impulse of force. From Newton's second law

$$F = ma = m \frac{\Delta v}{\Delta t}$$

The impulse of force can be extracted and found to be equal to the change in momentum of an object provided the mass is constant:

$$\text{Impulse} = F\Delta t = m\Delta v$$

The change in momentum is in the same direction as the applied impulse.

Thus, angle between them is 0° .

Answer. (1) 0° .

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