

Answer on Question #43379 , Physics, Mechanics | Kinematics | Dynamics

two moving objects have the same momentum. object 1 has three times the mass of object 2 therefore object 1 has __the velocity of object 2

the same

one third

one ninth

three times

Solution.

The definition of the momentum is:

$p = m \cdot V$, where m is a mass of object, V – its velocity.

For two moving objects we have:

$$p_1 = m_1 \cdot V_1$$

$$p_2 = m_2 \cdot V_2$$

And $p_1 = p_2$. So:

$$m_1 \cdot V_1 = m_2 \cdot V_2 \Rightarrow 3m_2 \cdot V_1 = m_2 \cdot V_2 \Rightarrow V_1 = \frac{V_2}{3}$$

Answer: one third