

A 3.0 kg ball strikes a wall with a velocity of 8.7 m/s to the left. The ball bounces off with a velocity of 7.5 m/s to the right. If the ball is in contact with the wall for 0.19 s, what is the constant force exerted on the ball by the wall?

N to the right



$$\vec{j} = \vec{F}\Delta t \Rightarrow \Delta m\vec{V} = m\Delta\vec{V} = \Delta\vec{p}$$

$$\vec{F}\Delta t = m\Delta\vec{V} = m(V_f - V_i)$$

$$F(.19s) = (3.0\text{ kg})(7.5\text{ m/s} - (-8.7\text{ m/s}))$$

A 66.0 kg ice skater moving to the right with a velocity of 2.87 m/s throws a 0.18 kg snowball to the right with a velocity of 24.3 m/s relative to the ground.

(a) What is the velocity of the ice skater after throwing the snowball? Disregard the friction between the skates and the ice.

m/s to the right

(b) A second skater initially at rest with a mass of 61.00 kg catches the snowball. What is the velocity of the second skater after catching the snowball in a perfectly inelastic collision?

m/s to the right

A 2000 kg car traveling at 11.3 m/s collides with a 2630 kg car that is initially at rest at the stoplight. The cars stick together and move 3.50 m before friction causes them to stop. Determine the coefficient of kinetic friction between the cars and the road, assuming that the negative acceleration is constant and that all wheels on both cars lock at the time of impact.

Submit New Answers To Question 32

Save Work

$P = P'$
 $P_A + P_B = P_{AB}$
 ① $m_A v_A + m_B v_B = m_{AB} v_{AB}$

$J = \Delta P'_{AB}$
 $F \Delta t = m_{AB} \Delta v_{AB}$
 $-F \Delta t = -m_{AB} v_{AB}$
 $\mu m_{AB} g \Delta t = m_{AB} v_{AB}$
 ②

$$\vec{v}_f^2 = \vec{v}_i^2 + 2\vec{a}\Delta\vec{d}$$

$$0^2 = (V'_{AB})^2 + 2a(3.5\text{m})$$

See video also

$$\textcircled{3} \quad a = \frac{-(V'_{AB})^2}{2(3.5\text{m})}$$

$$\textcircled{5} \quad \Delta t = \frac{2(3.5\text{m})}{V'_{AB}}$$

$$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$$

$$0 = V'_{AB} + a \Delta t$$

$$\textcircled{4} \quad \Delta t = \frac{-V'_{AB}}{a}$$