A 0.160-kg {\rm kg} hockey puck is moving on an icy, frictionless, horizontal surface. At t=0 t=0 the puck is moving to the right at 2.91m/s m/s .
1)Calculate the magnitude of the velocity of the puck after a force of 25.9N N directed to the right has been applied for 6.0×10−2s s .
2)If instead, a force of 12.7N N directed to the left is applied from t=0 t=0 to t= t= 6.0×10−2s s , what is the magnitude of the final velocity of the puck?

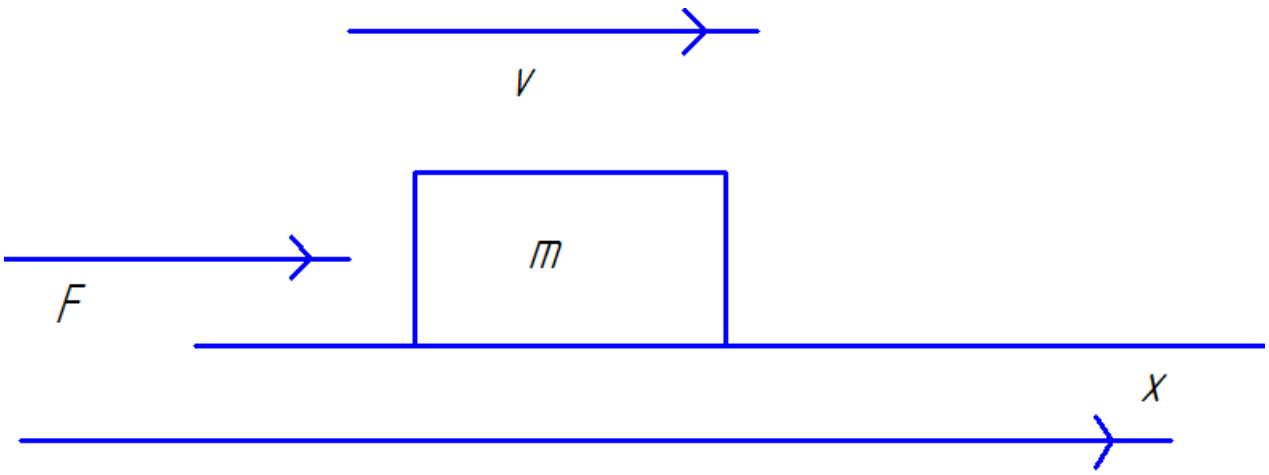
Solution:

Let $v_0 = 2.91\ m/s - magnitude\ of$ hockey puck $velocity\ before\ force\ action$

$v_f - magnitude\ of\ of$ hockey puck $velocity\ after\ force\ action$

1)Calculate the magnitude of the velocity of the puck after a force of 25.9N N directed to the right has been applied for 6.0×10−2s s .
Since the force and velocity have the same direction:

$$F = m\frac{v - v_0}{t} \rightarrow v = v_0 + \frac{Ft}{m} = 2.91 + \frac{25.9 * 6 * 10^{-2}}{0.16} = 7.26\ m/s$$

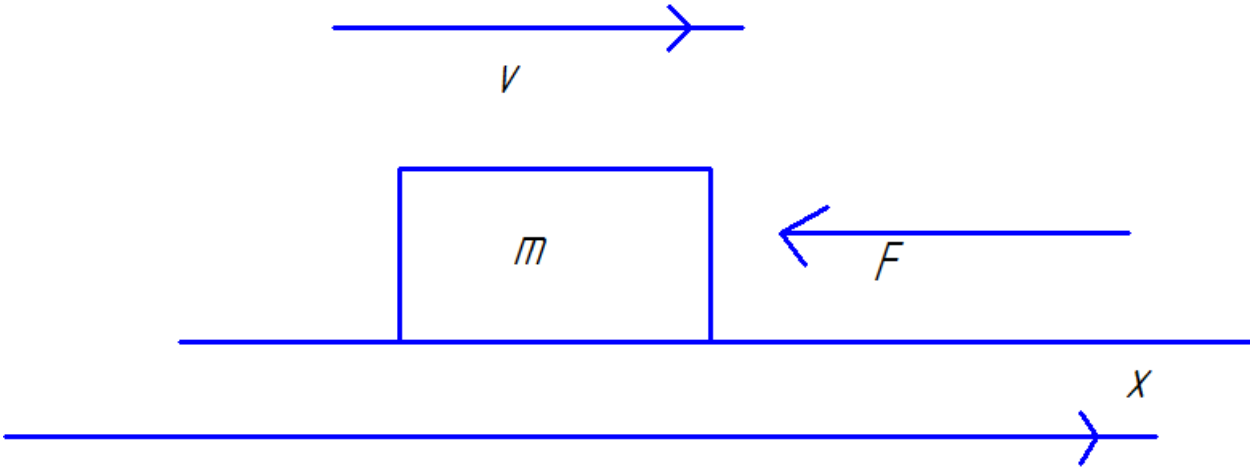



2)If instead, a force of 12.7N N directed to the left is applied from t=0 t=0 to t= t= 6.0×10−2s s , what is the magnitude of the final velocity of the puck?

Since the force and velocity have the opposite direction:

$$-F = m\frac{v - v_0}{t} \rightarrow v = v_0 - \frac{Ft}{m} = 2.91 - \frac{12.7 * 6 * 10^{-2}}{0.16} = -1.853\ m/s$$

a minus sign indicates that the puck will fly in the opposite direction




Answer: 1.  7.26 m/s, v=1.85 m/s