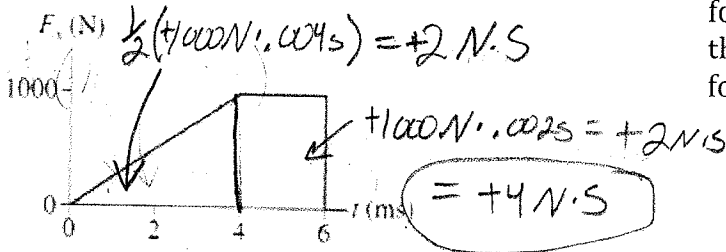
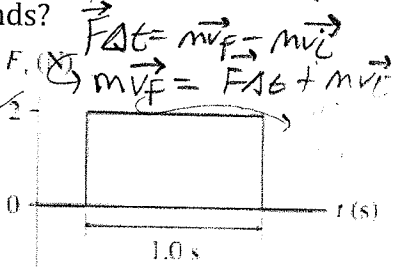


Impulse & Momentum w/ Force-Time Graphs Name: Key

1. What impulse does the force shown in the figure below exert on a 250 g particle?

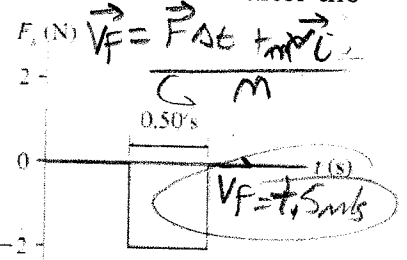


2. A 2.0 kg object is moving to the right with a speed of 1.0 m/s when it experiences the force shown in the figure below. What are the object's speed and direction after the force ends?

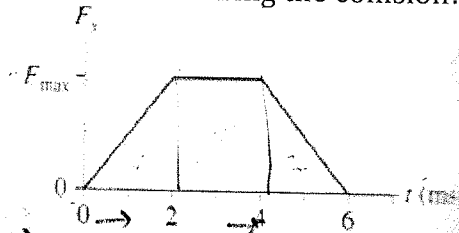


Handwritten calculations:  
 $\vec{F}\Delta t = m\vec{v}_F - m\vec{v}_i$   
 $m\vec{v}_F = \vec{F}\Delta t + m\vec{v}_i$   
 $\vec{v}_F = \frac{2\text{ N} \cdot 1.0\text{ s} + (2.0\text{ kg} \cdot 1.0\text{ m/s})}{2.0\text{ kg}}$   
 $m\vec{v}_F = +4\text{ kg}\cdot\text{m/s}$   
 $\vec{v}_F = +2.0\text{ m/s}$

3. A 2.0 kg object is moving to the right with a speed of 1.0 m/s when it experiences the force shown in the figure below. What are the object's speed and direction after the force ends?



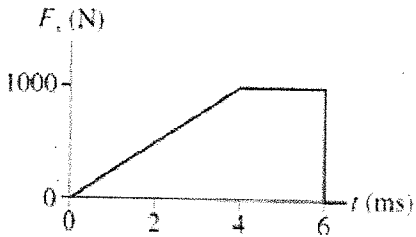
4. A 60. g tennis ball with an initial speed of 32 m/s hits a wall and rebounds with the same speed. The figure shows the force of the wall on the ball during the collision. What is the value of  $F_{\text{max}}$ , the maximum value of the contact force during the collision?



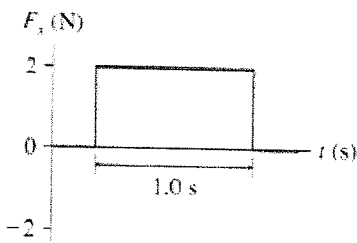
Handwritten calculations:  
 $\Delta \vec{p} = m\vec{v}_F - m\vec{v}_i = (0.06\text{ kg} \cdot 32\text{ m/s}) - (0.06\text{ kg} \cdot -32\text{ m/s})$   
 $\Delta \vec{p} = +3.84\text{ kg}\cdot\text{m/s} = \frac{1}{2}(\vec{F} \cdot 0.002\text{ s}) + (\vec{F} \cdot 0.002\text{ s}) + \frac{1}{2}(\vec{F} \cdot 0.002\text{ s})$

Impulse & Momentum w/ Force-Time Graphs Name: \_\_\_\_\_

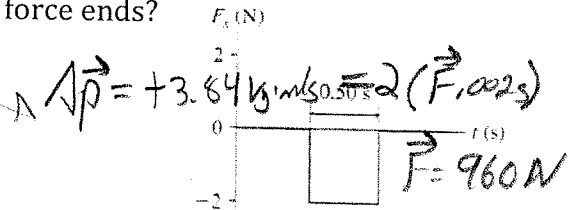
1. What impulse does the force shown in the figure below exert on a 250 g particle?



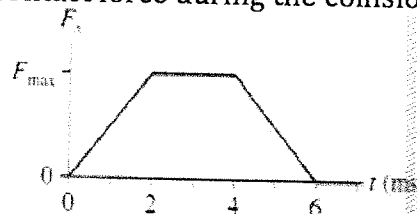
2. A 2.0 kg object is moving to the right with a speed of 1.0 m/s when it experiences the force shown in the figure below. What are the object's speed and direction after the force ends?



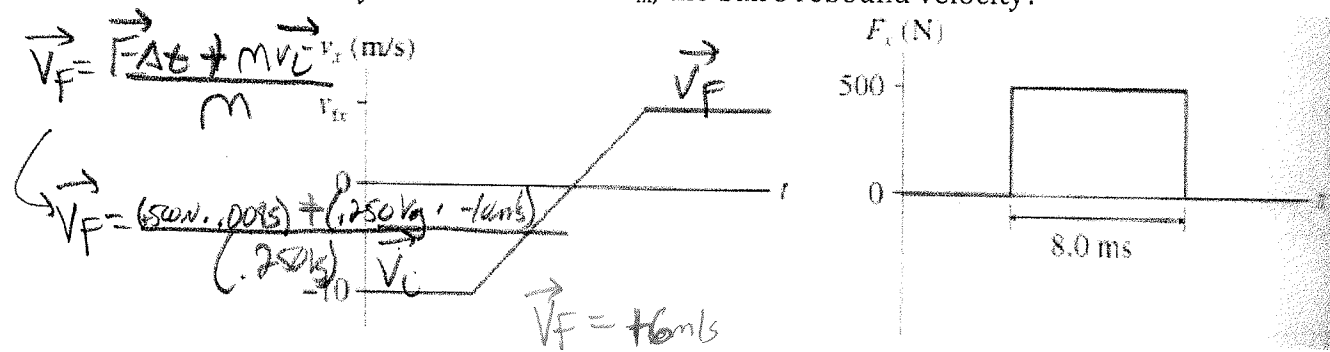
3. A 2.0 kg object is moving to the right with a speed of 1.0 m/s when it experiences the force shown in the figure below. What are the object's speed and direction after the force ends?



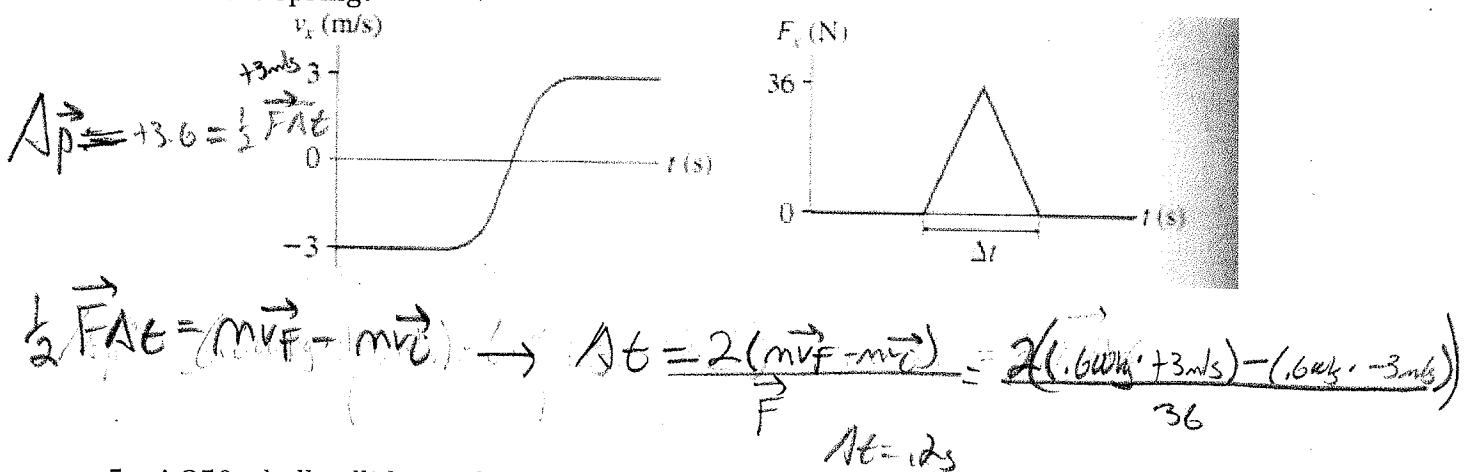
4. A 60. g tennis ball with an initial speed of 32 m/s hits a wall and rebounds with the same speed. The figure shows the force of the wall on the ball during the collision. What is the value of  $F_{\text{max}}$ , the maximum value of the contact force during the collision?



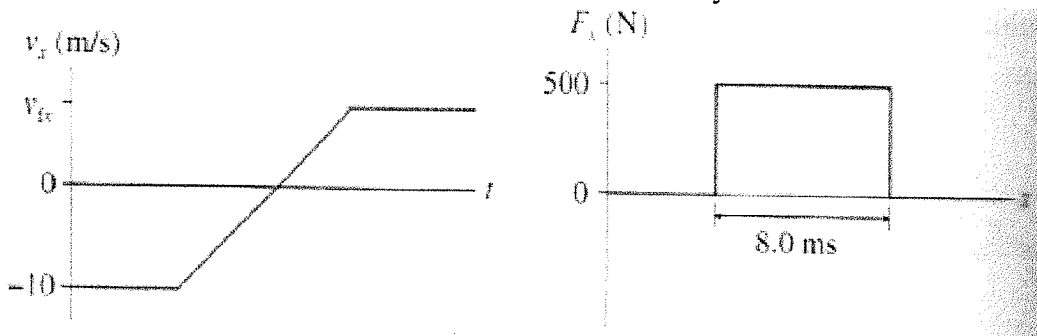
5. A 250 g ball collides with a wall. The figures below shows the ball's velocity and the force exerted on the ball by the wall. What is  $v_{fx}$ , the ball's rebound velocity?



6. A 600. g air-track glider collides with a spring at one end of the track. The figures below shows the glider's velocity and the force exerted on the glider by the spring. How long is the glider in contact with the spring?



5. A 250 g ball collides with a wall. The figures below shows the ball's velocity and the force exerted on the ball by the wall. What is  $v_{fx}$ , the ball's rebound velocity?



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