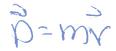
Name:	Ken	

## Notes - 8.1 Linear Momentum and Force

- 2. Write the equation for momentum.



3. What are the units for momentum?



4. Calculate the momentum of a 110-kg football player running at 8.00 m/s.

5. Write Newton's 2<sup>nd</sup> law of Motion in terms of momentum.

6. During the 2007 French Open, Venus Williams hit the fastest recorded serve in a premier women's match, reaching a speed of 58 m/s (209 km/h). What is the average force exerted on the 0.057-kg tennis ball by Venus Williams' racquet, assuming that the ball's speed just after impact is 58 m/s, that the initial horizontal component of the velocity before impact is negligible, and that the ball remained in contact with the racquet for 5.0 ms (milliseconds)? Show your work.

$$F_{AVG} = \frac{\Delta P}{\Delta t} = \frac{mV_f - mV_i}{\Delta t}$$

$$= 0.057k_{S}(58 - 0\frac{m}{s}) - \frac{5.0 \times 10^{-3} \text{ s}}{661 \text{ m}}$$