**Momentum Formula Sheet:**

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| **Impulse:**  **Impulse Momentum Theorem:** | **Momentum:**  **Change in Momentum:** |
| **Force-Time Graphs:** | **Impulse from a Variable Force:**  **Force-Time Graphs:** |
| **Newton’s 2nd Law in Terms of Momentum:** | **The Force exerted by a Fluid:**  **Mass Flow Rate:** |
| **The Momentum Function:** | **Average Net Force:** |
| **Inelastic Collisions:**   1. Momentum is conserved. 2. Kinetic energy is not conserved.   **Conservation of Momentum:**  **Final Velocity of Two Objects Sticking Together:** | **Elastic Collisions:**   1. Momentum is conserved. 2. Kinetic energy is conserved.   **Conservation of Momentum:**  **Conservation of Kinetic Energy:** |

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| **Momentum Vectors:** | **Momentum Vector Formulas:** |
| **Center of Mass:** | **Recoil Velocity:** |
| **Elastic Collision – The Shortcut Formula:** | **Ballistic Pendulum - Initial Speed of the Bullet:**  **The Height of the Block:**  **Note:** These formulas apply online when the bullet remains embedded in the block. |
| **The Coefficient of Restitution:**   1. Completely Inelastic Collision: 2. Inelastic Collision: 3. Elastic Collision: | **The Coefficient of Restitution:** |