**Forces – Formula Sheet:**

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| **Newton’s 1st Law:** | An object at rest will remain at rest and an object in motion will continue in motion unless acted on by a net external force. |
| **Newton’s 2nd Law:** |  |
| **Newton’s 3rd Law:** | For every action force, there’s an equal and opposite reaction force. |
|  | **Weight Force:**  **Normal Force:**  **Net Force:**  **Kinetic Friction:**  **Static Friction:** |
|  | **Net Force:**  **Normal Force:**  **Tension Force:** |

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|  | **The Elevator Problem:**  **Normal Force:** |
|  | **Contact Force:** (Without Friction) |
|  | **Contact Force:** (Without Friction) |
|  | **Tension Force:** |
|  | **Tension Force:** |
|  | **Tension Force:** |
| Note: For examples with friction, see my physics video playlist at ***www.Video-Tutor.net*** | |

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|  | **Acceleration:**  **Tension Force:**  **Note:** |
|  | **Acceleration:**  **Tension Force:** |
|  | **Acceleration:** (If **m2** > **m1**)  **Tension Force:** |
|  | **Minimum Angle Needed for the Box to Begin Sliding:** |

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|  | **Acceleration:** (Without Friction)  **Acceleration:** (With Friction) |
|  | **Net Force:**  **Note:** will always point opposite to the direction of motion. |
|  | **Acceleration:** (Without Friction)  **Tension:** (Without Friction) |
|  | **Acceleration:** (With Friction)  **Tension:** (With Friction) |

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|  | (a = **-**)  **Acceleration:** (Without Friction)  **Tension:** (Without Friction) |
|  | **Acceleration:** (With Friction)  **Tension:** (With Friction) |