**Motion and Forces Study Guide**

*Students will be able to:*

* Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed.
* Graph and interpret distance vs. time graphs for constant speed.
* Understand and apply Newton’s 3 Laws of Motion.
* Understand that all changes in motion are caused by forces and that net forces result in accelerations.
* Understand and interpret free body diagrams and the various ways in which they are used to describe the forces acting upon an object.

*State standards addressed:*

* 8.MS-PS2-1. Develop a model that demonstrates Newton’s third law involving the motion of two colliding objects.
* 8.MS-PS2-2. Provide evidence that the change in an object’s motion depends on the sum of the forces on the object (the net force) and the mass of the object.

**Key word or Concept:** **Student definition**

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| Motion |  |
| Kinematics |  |
| Speed |  |
| Velocity |  |
| Magnitude |  |
| Scalar |  |
| Vector |  |
| Distance  |  |
| Time |  |
| Displacement |  |
| Force |  |
| Net Force |  |
| Balanced Force |  |
| Unbalanced Force |  |
| Friction |  |
| Inertia |  |
| Action and Reaction Forces |  |
| Acceleration |  |
| Negative Acceleration |  |
| Initial Speed |  |
| Final Speed |  |
| Projectile Motion |  |
| m/s (Meter/second) |  |
| m/s2 (Meter/second squared) |  |
| Momentum |  |
| Elastic Collisions |  |
| Inelastic Collisions |  |
| Newton’s 1st Law of motion |  |
| Newton’s 2nd Law of motion |  |
| Newton’s 3rd Law of motion |  |
| Free Body diagrams |  |
| Distance/Time Graphs |  |