# *Force & Motion & Simple Machines* Learning Goals:

| | Learning Goal | Goal | Quiz | Test |
|---|---|---|---|---|
| 1 | **MOTION**<br>I can classify different types of motion.<br>★ This means that when I am given a scenario, I can determine whether the type of motion is straight line, projectile, circular, deformation, oscillating, or vibrational. | | | |
| 2 | **SPEED/VELOCITY/ACCELERATION**<br>I can calculate an object's speed (distance/time) and velocity.<br>★ This means that given an object's speed, distance, and/or time I can calculate the missing information and label my answers with the correct units.<br>★ This means I can explain what it means to accelerate.<br>★ This means I can calculate the acceleration of an object using the appropriate formula. (Challenge only) | | | |
| 3 | **GRAPHING**<br>I can create and interpret graphs representing an object's motion in terms of distance over time (speed) using metric units.<br>★ This means I can create and interpret a line motion graph.<br>★ This means that I can create and interpret a speed graph. | | | |
| 4 | **FORCES**<br>I can identify and describe the types of forces acting on an object in motion, at rest, floating/sinking (i.e., type of force, direction, amount of force in Newton's)<br>★ This means that I can measure forces usign a spring scale accurately, in Newtons.<br>★ This means that iI can compare the effects of balanced and unbalanced forces (including magnetic, gravity, friction, push or pull) on an object's motion.)<br>★ This means that I can determine the net force and direction of two combined or opposing forces including the correct units. | | | |
| 5 | **GRAVITATIONAL FORCE**<br>I can explain and compare the impact of gravitational force.<br>★ This means I can explain every object exerts a gravitational force of attraction on every other object.<br>★ This means I can recognize an object's weight is a measure of the gravitational force of a planet/moon acting on that object.<br>★ This means I can compare the amount of gravitational force acting between objects (which is dependent upon their masses and the distance between them).<br>★ This means I can explain how the acceleration of a moving object is affected by the amount of net force applied and the mass of the object (F = MA). | | | |
| 6 | **NEWTON'S LAWS OF MOTION**<br>I can explain and apply Newton's three laws of motion.<br>★ First Law: I can explain that when forces (including magnetic, gravity, friction, push or pull) are balanced, objects are at rest or their motion remains constant.<br>★ Second Law: I can explain that the greater the mass of an object, the greater the force necessary to accelerate that object.<br>★ Third Law: I can explain that for every action there is an equal and opposite reaction. | | | |
| 7 | **WORK**<br>I can understand what is work is and how to apply it.<br>★ This means I can recognize examples of work being done on an object (force applied and distance moved in the direction of the applied force) with and without the use of simple machines.<br>★ This means that I can use the formula (W=Fxd) to calculate work and give the answer using the correct units. | | | |
| 8 | **SIMPLE MACHINES**<br>I can understand how simple machines can affect force and work.<br>★ This means I can explain how simple machines affect the amount of effort force, distance through which a force is applied, and/or direction of force while doing work<br>★ This means I can evaluate simple machine designs to determine which design requires the least amount of effort force and explain why. | | | |