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| Unit | Essential Skill | Helpful Places to Study\* |
| 1-1 | Student can identify correct variables and units for velocity, time, acceleration, displacement/distance. | Notes |
| 1-2 | Student knows how to solve problems that involve constant speed and average speed. (ca. 1a) | KC6 |  |
| 1-3 | Student can determine the instantaneous velocity of an object undergoing a constant acceleration | Kinematic Problem Solving Worksheet |  |
| 1-4 | Student can determine the distance traveled for an object undergoing a constant acceleration. | Kinematic Problem Solving Worksheet |  |
| 1-5 | Student can correctly interpret motion graphs. | KG10, KG2, KG6 |  |
| 2-1 | Student knows the variable names, symbols, unit names, and unit symbols for net force, mass, acceleration, weight/force due to gravity and acceleration due to gravity. | Notes |  |
| 2-2 | Student knows that when forces are balanced, no acceleration occurs; thus an object continues to move at a constant speed or stays at rest (Newton's first law). (ca 1b) | NL1 |
| 2-3 | Student knows how to apply the law F=ma to solve one-dimensional motion problems that involve constant forces (Newton's second law). (ca 1c) | NL9 |
| 2-4 | Students know that when one object exerts a force on a second object, the second object always exerts a force of equal magnitude and in the opposite direction (Newton's third law). (ca 1d) | NL12 |
| 2-5 | Student can construct a set of accurate free body diagrams (FBD) from a group of static objects. | Newton’s 3rd Law WS |
| 3-1 | Student can identify all of the variables names, variable symbols, unit names and unit symbols for force, mass, radius, velocity, universal gravitational constant, and acceleration due to gravity. | Notes |
| 3-2 | Student knows applying a force to an object perpendicular to the direction of its motion causes the object to change direction but not speed. (ca 1f) | CG2 |
| 3-3 | Student knows circular motion requires the application of a constant force directed toward the center of the circle. (ca 1g) | CG2 |
| 3-4 | Student knows how to solve problems in circular motion by using the formula for centripetal acceleration in the following form: a=v2/r. (ca 1l\*) | CG5 |
| 3-5 | Student knows the relationship between the universal law of gravitation and the effect of gravity on an object at the surface of Earth and can calculate the gravitational force between any two masses. (ca 1e, 1m) | CG6 |

**Essential Skills for Semester 1 Final Exam**

**\*These helpful places to study are NOT the ONLY places you can use to study/prepare for the final. All worksheets and labs/activities are great places to look as well. Or, review information on physicsclassroom.com.**