Mr. Forrest/ AP Physics 1

Qtr: _____ Your name: _____

	Quarter 3 Stanards

Laboratory skills

Standard	Description
LB1	I can communicate and represent the details of an experimental procedure clearly and completely
LB2	I can design and carry out experiments based on the task at hand using a working hypothesis and selecting appropriate lab equipment that is used correctly
LB3	I can consider the precision of the measuring device when recording data and performing calculations, and I will maximize the amount and range of data collected within the time allowed
LB4	I can make a reasonable judgement about the results of a given experiment supported by evidence and reasoning and use this to revise a hypothesis when necessary
LB5	I can identify patterns in data and represent the data mathematically and graphically, along with providing physical meaning to the slope, y-intercept, and area where appropriate. If slope is changing, I can explain the physical significance of this

Habits of Mind

Standard	Description
HM1	I actively participate in labs, small group discussions, and whole class discussions to increase my own understanding as well as that of my peers
HM2	I focus on physics during physics class and am ready to learn through the entire class period; I limit my use of electronics to situations that help me learn physics. I help foster an atmosphere conducive to learning and am willing to ask and offer help from my teacher and peers
HM3	I perform deliberate practice to improve my understanding of physics, as shown by: class involvement, coming in for extra help, and completing homework, labs, practice AP problems and classwork to the best of my ability and review and reflect on my work. I can implement a plan for improvement based on feedback from my teacher and peers. I work hard in and out of class. Compared to my best effort, I'm performing well.
HM4	I am well prepared and put full effort into formative assignments such as homework and reading quizzes. I show evidence of out-of-class preparation to allow me to be successful in my in-class work
HM5	I demonstrate competence in material learned from previous quarters, thus showing I am preparing for the AP exam and reviewing content that may have been difficult for me earlier in the year

NOTE: To complete this quarter's content standards you will often need to demonstrate understanding and connections with previous standards. These will not be assessed separately, but rather as part of this quarter's standards

Dynamics (Forces and Newton's Laws)

Standard	Description
F7	I can demonstrate an understanding of springs and Hooke's Law and describe how springs behave when forces are placed on them, as well as when spring are placed in series or parallel with each other

3rd quarter update! A change in how retake tests will be done. I want every student to know that each test is important, and not to fool themselves into thinking, "Oh, I can just retake a test later." Often times, this just hasn't happened, or when it does students have performed worse! This quarter there will be ONE replacement test taken toward the end of the quarter during class time. You may select four total standards (from any of the quarter's previous tests) to retake and let me know this at least a week in advance of your test. I'll likely ask you to complete a small assignment for the retake. If you do so, you can get up to 10/10 on all the standards you retake. If not, you can earn up to 8/10 on all the standards you retake. Be careful NOT to miss a test before this – if you do, and are unable to take it before the test is handed back you will be required to retake the standards on the test you missed! If you'll have a preplanned absence and you know about it, see me in advance. So overall, the goal of the modified retake policy is to (a) have students focus, study and prepare better for initial tests, (b) be able to have ALL students retake standards during class time, and (c) be better prepared for your AP exam in May.

Projectiles

Standard	Description
P1	I can demonstrate the independence of horizontal and vertical motion for projectiles both mathematically, graphically, with motion maps, and through descriptions
P2	I can model the horizontal and vertical motion of a projectile using constant velocity and constant acceleration models and solve mathematical problems involving projectile motion using 1-D motion concepts learned earlier in the course
P3	I can use video analysis techniques to produce vertical and horizontal position-time and velocity-time graphs to represent the motion for an object moving in 2 dimensions

Energy and energy interactions with work

Standard	Description
EN1	I can identify collision types (elastic, inelastic, perfectly inelastic, and explosions) based on given information and use this to predict the motion and energies of objects, or I can use my understanding of energy to predict the type of collision
EN2	I can describe the total internal energy of a system as a sum of kinetic and potential energies and use the Law of Conservation of Energy to explain the changing of energy types and energy entering or leaving the system; including using work-energy bar charts
EN3	I can perform calculations for objects involving one or more types of energy, including elastic potential energy, gravitational potential energy, and kinetic energy; I can also explain the fundamental difference between potential energy and kinetic energy
EN4	I can explain the physics concepts of Work and Power qualitatively, quantitatively, and graphically (as areas of F vs. position for work or potential energy) including showing that an object undergoing uniform circular motion (UCM) has no work done on it
EN5	I can determine whether or not mechanical energy is conserved in a system, and what forces are conservative and non-conservative as well as explain that mechanical energy can be lost in the form of heat

Circular motion, gravitation, and orbits

Standard	Description
CIR1	I can relate the formula for centripetal acceleration or centripetal force to derive quantities such as orbital velocity, coefficient of friction and others that relate to circular motion and I can identify the forces (such as gravity, friction, or tension) on an object undergoing Uniform Circular Motion (UCM) and relate these to the centripetal (net) force on the object
CIR2	I can correctly use and apply Newton's Law of universal Gravitation mathematically, and conceptually to predict how gravitational forces change as positions and masses of objects change
CIR3	I can relate angular units to linear units (e.g., $v = \omega * r$) as needed to demonstrate an understanding of how linear and circular motion are related.

Rotational mtion, angular momentum, and torque

Standard	Description
ROT1	I can make analogies to linear motion and acceleration by using torque and rotational motion with Newton's 2nd Law for rotation ($a = \frac{Force_{net}}{Mass}$ compared with $\propto = \frac{Torque_{net}}{Rotational\ inertia\ (I)}$)
ROT2	I can make predictions about whether a system will be in rotational and/or translational equilibrium by analyzing given information about a system
ROT3	I can determine the rotational inertia (aka moment of inertia, "I") of a system by knowing various factors such as mass, radius and mass location
ROT4	I can apply my understanding of mechanics to rotational systems (Newton's Laws, rotational energy and work, angular momentum, angular accelerations, angular velocities and angular displacements)
ROT5	I can apply conservation of angular momentum and linear momentum to predict the motion of rotating objects that undergo a collision, as well as show that angular momentum within a given system is always conserved unless the system experiences an outside torque