

APPB Fall Semester Review Sheet 2002

UP TO THE FIRST TEST

This list is everything I can think of that we studied. Anything we did in class or that was assigned for homework might show up on the test, even if it's not on this sheet. I will try to make up the test so that most of the points are over the things I think are most important.

- SI system
- Uncertainty/significant figures
- Fermi estimation problems
- scientific notation
- operational definition
- meaning of area
- distance
- displacement
- average speed
- average velocity
- reference point
- clock reading
- time interval
- graphing data by hand, computer, and calculator
- best-fit lines, best-fit curves
- position-time graphs
- meaning of the slope of a graph
- meaning of the intercept of a graph
- finding instantaneous vel. from a graph
- velocity-time graphs (include. finding displacement from area of)
- linear relationship
- parabolic (quadratic) relationship
- kinematics stacks with constant (uniform) velocity
- kinematics stacks with uniform acceleration
- frames of reference
- average acceleration
- solving constant acceleration problems
- using the quadratic formula to solve constant acceleration problems

STUFF WE WILL DO FOR THE REST OF THE SEMESTER

- solving constant acceleration problems with gravity as the acceleration
- instantaneous acceleration (slope of the tangent, 2nd derivative of d-t function)
- projectile motion, vertical & horiz. components of velocity
- parabolic nature of projectile motion
- acceleration throughout the motion = g
- using kinematics equations to predict projectile motion (including quadratic equation solution)
- four fundamental forces
- Newton's laws
- Explain Inertia, Mass, Weight
- Free-Body diagrams
- Net force equations
- Problems with Frictional force, Tension force, Weight, Applied Force (ramp problems and others)
- (Hint: the Net force causes acceleration, the Net acceleration is what the object experiences)
- Vectors (as applied to forces and velocities, esp.) Graphical & Analytical method of solving
- Statics: Problems where 2 conditions must be satisfied $\Sigma T=0$, $\Sigma F=0$
- Uniform circular motion requires a centripetal force (two eq'ns for F_c)
- dynamics problems w/ uniform circ. motion: i.e. car on a curve, car on a banked curve, planes & roller coasters in loops, orbits
- period and velocity in uniform circ. motion
- Kepler's laws
- Newton's formula for Universal Gravitation
- Using Universal Grav. to examine orbital motions by rearranging eq'ns to solve for other stuff i.e., period, velocity, mass, acceleration
- Gravitational constant
- Cavendish experiment
- Gravitational potential energy, elastic potential energy
- kinetic energy
- definition of work
- Work-energy principle
- Conservation of energy
- Conservative & non-conservative forces
- Conservation of energy problems
- Power
- Conservation of linear momentum
- Elastic collisions
- Inelastic collisions
- Impulse-momentum theorem
- Center of mass
- Problems with energy conservation, kinematics, linear momentum (ballistic pendulum, etc.)
- Problems using impulse to predict momentum changes, vice-versa
- Collision problems
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