**Physics AP1 FCHS 2018-19**

**Mr. French 803-5613**

[**rick.french@ftcsc.k12.in.us**](mailto:rick.french@ftcsc.k12.in.us)

AP Physics Test Covers the following content Areas

Traditional Mechanics

* Kinematics (Linear and Rotational)
* Forces: Statics and Dynamics
* Rotational kinematics , statics and dynamics
* Centripetal, Gravity, (Forces, Motion, Energy)
* Oscillations including: springs, pendula, physical pendula, and 2-D orbital
* Forces Motion friction, planes
* Energy and Momentum (elastic and inelastic)
* Electricity enough theory to do simple circuitry

Then simple series, parallel, and complex

* Waves: Mechanical with mathematical analysis

Modeling Theory:

Discover first, then anchor/explain

Do the experiment, find the relationship, then solidify;

1. Ball Bounce (mathematically and graphically)
2. Pendulum (Period vs. length)
3. Constant Velocity (toy car)

D = rate \* time

1. Constant Acceleration: Galileo’s Lab II
2. Motion and graphing

on position vs time graph

slope is velocity (V (rate) = d/t = rise/run)

on velocity vs time graph

slope is acceleration a = (change in v)/time

area is distance travelled;

distance = rate \* time

on acceleration vs time graph

area is change in velocity;

change in velocity = acceleration \* time

Equations:

Linear: y=mx+b

Quadratic : y=kx2

y =kx1/2

1. Vavg = X/t = (Xf-Xi)/(tf-ti) (X,t,Vavg)
2. a = v/t = (vf-vi)/(tf-ti) (t,a,Vf,Vi)
3. Vavg = (Vi+Vf)/ 2 (Vavg, Vf,Vi)
4. x(t) = Xi+Vit + ½ a (t)2 (X,Xi,Vi,t,a)
5. X = (Vf2-Vi2)/(2X) (Vf,Vi,a, X)

**Problem Solving**:

Read the problem,

determine the given,

determine what relationship applies

solve for the correct answer

check for reasonableness

Read, Pay attention, Ask questions, Attend, do work (labs and homework)



You don’t have to be Einstein, but you do have to think… and write…and explain…

Three levels of understanding:

1. Broad, (C) Conceptual = general, verbal descriptive… in the first place…what you walk in the door with “It got bigger.”
2. Relationship When the mass doubles, the volume doubles as well…they are directly proportional, (“inversely”, “go as the square”, the square root…

Density = mass / Volume

1. Higher order and finesse…trigonometric vector addition (sin, cos, tan)

Definitely: “rates of change” Y/X, x/t, v/t…Some (+) Calculus dy/dx, dx/dt, dv,dt

Definitely: graphing and interpreting graphs and equations.

Know all three, be able to use complete sentences and describe what you think is going on, both on labs, in homework, and on quizzes and tests.

***Explain = Claim + Evidence + Reasoning***

***Lab Write Ups:***

**Purpose**: [Q],[P] state what you are trying to provein the form of a [Q] question and make a [P] prediction.

**Procedure**: State the steps and the methods actually used clearly enough so data could be reproduced by someone else.

**Data**: [D], [O] The raw data that you and your group generated and [O] Observations

**Calculations**: [C], [E] One sample of each calculation or manipulation you did with your data. [E] error analysis

**Graphs and Figures**: any pertinent graphs and figures

**Conclusion**: [E AND A] Explain: “What did you discover or verify” in the lab…relate it back to the purpose. [E] Error analysis, quality analysis, reliability analysis. [A] Applications to real world and physics we know (words and sentences)

***Homework:*** Homework will be due on Fridays. If it is Friday tomorrow,(aka Thursday) you have homework and possibly labs due in Physics tomorrow.

10% off per day (that we are here at school), so 10 days later, the homework is worth 0%) We will have answer keys for subsets of the problems in groups, so there should be little reason for late homework.

There will be periodic reading quizzes that will go into the 10% portion of the grade. You may use notes taken from the reading on these quizzes.

***Quizzes, Quests, and labs***: all go in the 25% portion of the grade. There will be written, short answer, problem solving, and multiple choice questions.

***Pre-/Post- testing*** will not count against you, but gains will be factored in.

Do your own work

**Cheating**: (1st offense: take a 0 have an opportunity to make up homework or take test on your own time for 81% max, 2nd offense 0 do not re-take the offending grade, 3rd offense – F for the nine weeks.

Cheating counts if it occurs on Homeworks, labs, quizzes, quests or tests, projects, or Final exams. Don’t copy.

If you are copying work for this class or another during this class, both the new and the original versions will be confiscated and destroyed. You have been warned.

***Semester Grades:***

1st nine weeks 42.5 %

2nd nine weeks 42.5 %

Final 15 %

Semester Grade

1st 9 wks x 0.425 + 2nd 9 wks x 0.425 + Final x 0.15

All un-taken grades are pro-rated out.

Homework 10%

Labs, Quizzes, Particiapation 25%

Tests 65%