AP Physics 1 Summer Assignment

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Future AP Physics Student,

Welcome to AP Physics! In order for us to have the most successful year possible in AP Physics, we will need to be able to jump right in to new topics when we get back to school. In order to do that, you need to review and practice topics from first year chemistry and math over the summer. Most of the problems that you need to work on are things that you have already learned, but if you need help, remember to check out the websites listed below. There may be a few things that you will need to look up for the first time.

AP Physics will move at a fast pace and will be more rigorous than on-level physics so that we can be prepared for the AP exam in May. We also will be spending more time on in-depth labs and lab reports. To get started at the right pace, you need to make sure you can work through all these problems correctly. The links below are there to help you. Remember that you are the only one who will be taking your summative assessments this year, and you are the only one who will take your AP exam, so you should do all of your own work on the summer assignment.

These websites are helpful:

http://www.learnapphysics.com/ Sign up for the AP Physics Question of the day.

http://www.studentguide.org/physics-resources-for-students/

http://www.aplusphysics.com/

http://www.exploratorium.edu/snacks/

http://phet.colorado.edu/

http://www.myphysicslab.com/index.html

http://www.physicsclassroom.com/

http://www.learnapphysics.com/apphysics1and2/index.html

http://www.montereyinstitute.org/

SHOW WORK FOR ALL PROBLEMS. USE SIGNIFICANT DIGITS. Some problems will need to be done on your own paper and attached.

1. Write the **most common guidelines** to determine significant figures (digits) with examples for adding/subtracting and multiplying/dividing?

2. Use **dimensional analysis** to convert the following:
   a. 200 meters = ___ miles.
   b. 650 in = ____ meters
   c. 4 years= _____ seconds.

3. Classify each of the following as units of mass, volume, length, density, energy, or pressure.
   a.Kg b. Liter c. m^3 d. mm e. kg/m^3

4. Most laboratory experiments are performed at room temperature at 65˚C. Express this temperature in Kelvin:

5. How many **significant figures** are in each of the following?
   a. 1.9200 mm b. 0.0301001 kJ c. 6.022 $x10^{23}$ atoms d. 460.000 L
   e. 0.000036 cm^3 f. 10000 g.1001

6. Record the following in correct **scientific notation**:
   a. 4050,000,000 cal
   b. 0.000123 mol

7. Calculate the following to the **correct number** of significant figures.
   a. 1.270 g / 5.296 cm^3
   b. 12.235 g / 1.010 L
   c. 12 g + 0.38 g
   d. 170g + 2.785 g

8. Convert **6.75 kg to**
   a. Grams b. Milligrams c. nanograms d. micrograms

9. Identify each of the following as being most like an **observation, a law, or a theory**.
   a. All coastal areas experience two high tides and two low tides each day.
   b. The tides in Earth's oceans are caused mainly by the gravitational attraction of the moon.
   c. Yesterday, high tide in San Francisco Bay occurred at 2.43 a.m. and 3.07 P.m.
   d. Tides are higher at the full moon and ne moon than at other times of the month.

10. What is a force? What are 2 units that can be used to measure force.

11. If a car is traveling at a rate of 15 km/h, what is its speed in m/s?

12. If an object has a mass of 4.14 g and a volume of 1.5 ml, what is the object's density? Would this object float in water? Explain.

13. W=mg; g=10N/kg. Solve for mass if the Weight of an object is 120N.

14. Draw a picture of a series circuit and label the components. Draw a picture of a parallel circuit and label the components.

15. If you have a series circuits consisting of 2 bulbs and you remove one, what will happen to the light in the other two bulbs?

16. Draw a wave and label the crest, trough, and wavelength.

17. If you have a parallel circuit consisting of 3 light bulbs and you remove one of them, what will happen to the light of the other two?

18. V=IR; If you increase the resistance but the voltage remains the same, what happens to the current?

19. Graph the following set of data:

Distance (m)	Time (s)
2	5
4	10
6	15
8	20
10	25

20. Is the speed constant? How do you know?

21. A person walks 15 km East then makes a 90 degree turn north. What is his / her displacement and direction?

22. A motorcycle travels at a 30 degree angle North of East at 35 km/ hr. What are the vector components (x,y) components of the motocycle?