Summer Reading assignment

AP Physics -1 Mrs. Pandya

2021-22

Welcome to AP Physics 1 !!!

<u>About the course:</u> The AP Physics 1 Course has been designed by the College Board as a course equivalent to the algebra-based college-level physics class. See course syllabus for details. The course will meet for 50 minutes every day. Lab work is integral to the understanding of the concepts in this course. At the end of the course, students will take the AP Physics 1 Exam, which will test their knowledge of both the concepts taught in the classroom and their use of the correct formulas.

Regarding above here is some basic activity given. Write your answers on separate paper and will discuss it on our first day of school. Enjoy your summer!!!

1. **Unit Conversions Review**

    Complete the SI prefix table below

Symbol	Name	Numerical Equivalent
n		
μ		
c		
m		
k		
M		
G		

2. **Convert the followings:**

    i)   18.7 kilograms into grams.

    ii)   460 nm into meters

    iii) 3.998×10^6 m/s into km/h

    iv) 2.78×10^8 km/h into m/s

    v)   54320000 s into Ms(mega second)

3. **Trigonometry Review**

    Complete the table below.

Θ	0^0	30^0	45^0	60^0	90^0
sin Θ					
cos Θ					
tan Θ					

4. **Algebra Review**

   Directions: Solve the following equations for the given variable and conditions. Simplify if needed.

   i) $\Delta x = v_0 + \frac{1}{2}at^2$, solve for t

   ii) $V_f = v_0 + at$, solve for a

   iii) $mg\sin\Theta = \mu mg\cos\Theta$, solve for Θ

   iv) $T = 2\pi\sqrt{\frac{l}{g}}$, solve for g.

   v) $F = G\frac{m_1 m_2}{r^2}$, solve for r.

   vi) $\frac{mv^2}{R} = G\frac{Mm}{R^2}$, solve for v

   vii) $T = 2\pi\sqrt{\frac{m}{k}}$, solve for m

   viii) $mgh + \frac{1}{2}mv^2 = \frac{1}{2}mv_a^2$, solve for v_a

5. **Use the equations in each problem to solve the specifies variable in the given terms. Simplify.**

   i) $F_c = ma_c$ and $a_c = \frac{v^2}{r}$, Solve for r in terms of F_c, m and v.

   ii) $T = 2\pi\sqrt{\frac{l}{g}}$ and $T = \frac{1}{f}$. Solve for L in terms of π, g, and f.

6. **Draw the graph for the given data, determine a mathematical formula for it. Give an explanation of your formula in words. Make sure to give an explanation of the slope.**

   i)

Time (s)	Distance (m)
0	0
1	2
2	9
3	19
4	33
5	50
6	70

ii)

Time (h)	Temperature(^{0}F)
0	82
1	80
2	78
3	76
4	74
5	72

7. **Below is a graph of a moving object's change in displacement over a particular time interval. Use the graph to answer the following questions:**
    i)   Displacement is the change in motion of any object, what are the units of displacements?
    ii)   For what time interval(s) is the object at rest? How do you know that?
    iii)   Is the object going in the same direction the entire time? How do you know?
    iv)   Describe the motion of the object during the following time intervals:
        a) 0-9 s
        b) 9-12 s
        c) 12-17 s
        d) 17-20s
        e) 20-25 s

Displacement (m) vs. Time (s)