

Summer Assignment for AP Physics 1

Google Classroom Join Code for AP Physics 1 2026-27: 7hqe7ytc

Instructor: Mr. Garra

Email: jgarra@oceanschools.org

Welcome to AP Physics 1! In this course, we will explore topics that are usually covered in the first semester of college physics: kinematics, forces, energy, momentum, rotational motion, vibrations, and fluids. Here is the College Board website for this course:

<https://apstudents.collegeboard.org/courses/ap-physics-1-algebra-based>

1. **Notebook and Calculator:** Each student will need a bound notebook and a handheld scientific calculator for this course.
 - Graphing calculators are allowed but not required.
 - Number each page of your notebook (front and back).
 - Please have these items ready for the first day of class.
2. **The Language of Physics:** A good way to learn about a new topic is to become familiar with its vocabulary. This will help you understand concepts and communicate your ideas clearly.
 - Please review the Unit 1 Vocabulary List on the following pages. It contains 40 vocabulary terms related to our first unit – Kinematics.
 - Record entries 1-25 in your AP Physics 1 notebook. The remaining entries (26-40) will be assigned after the course begins, but you are welcome to complete them ahead of time.
 - Write in pen, and leave a blank space after each entry. Your work must be neat and clear so that it is easy to read.
3. **Khan Academy (OPTIONAL):** This is a great resource for self-paced learning. It has videos, practice problems, and quizzes for AP Physics 1.
 - If you want to start learning over the summer, here is the link:
<https://www.khanacademy.org/science/ap-college-physics-1>
 - You are not required to complete any work on Khan Academy prior to the start of the course in September.

Summer Contact Info: If you need to contact me over the summer and don't receive a reply within 48 hours, please contact the Science Department Supervisor using the following:

Email: psullivan@oceanschools.org or Phone: 732-531-5600 ext. 1008

AP Physics 1

Unit 1 Vocabulary List

1. physical quantity – a measurable property of an object or system, expressed by a number and a unit.
2. unit – a standard amount of a physical quantity, like meter for length, second for time, or kilogram for mass.
3. vector – a quantity that has both magnitude and direction; often represented by an arrow.
4. scalar – a quantity that has magnitude but not direction.
5. significant figures – reliably known digits in a measured or calculated value.
6. percent uncertainty – the ratio of the uncertainty of a measurement to the measured value, expressed as a percentage.
7. kinematics – the description of how objects move using words, diagrams, numbers, graphs, and equations.
8. reference frame – an imaginary coordinate system attached to an observer or an object.
9. position – the location of an object at a particular moment.
10. displacement – the change in position of an object; tells you how far an object is from its starting point.
11. elapsed time – the amount of time that passes between the start and end of an event; an interval of time.
12. motion diagram – displays the position of a moving object at equally spaced time intervals.
13. velocity – the rate at which position is changing; tells you speed and direction.
14. acceleration – the rate at which velocity is changing; has both magnitude and direction.
15. distance traveled – the total length of the path traveled between two positions.
16. speed – the rate at which distance is traveled; describes “how fast” something moves.

17. average speed – distance traveled divided by elapsed time
18. average velocity – displacement divided by elapsed time
19. instantaneous – at a specific point in time
20. free fall – motion under the influence of the gravitational force only.
21. acceleration due to gravity – the acceleration of an object in free fall; represented by the symbol g .
22. air resistance – a force that opposes the motion of objects as they travel through the air.
23. relative velocity – the velocity of an object as observed from a particular reference frame.
24. projectile – any object that moves through space and is acted on only by gravity.
25. trajectory – the path traveled by a projectile.
26. hang time – the amount of time that a projectile remains in the air.
27. range – the maximum horizontal distance that a projectile travels.
28. vector addition – the process of adding vectors to determine their sum, which is also called the “resultant vector.”
29. vector components – a pair of perpendicular vectors whose sum represents a two-dimensional vector.
30. head-to-tail method – a graphical method of adding vectors in which the tail of each vector is placed at the head of the previous vector; the resultant vector is drawn from the tail of the first vector to the head of the final vector.
31. component method – an algebraic method of adding vectors that starts with resolving each vector into its components
32. dependent variable – the variable that is being measured; usually plotted along the y-axis.
33. independent variable – the variable that the dependent variable is measured with respect to; usually plotted along the x-axis

- 34. slope – the steepness of a line on a graph; equal to rise/run or $\Delta y/\Delta x$
- 35. integration – the process of calculating the area under the curve on a graph.
- 36. factor of change – final value divided by initial value
- 37. direct relationship – when two variables do the same thing. If one increases, the other increases. If one decreases, the other decreases.
- 38. inverse relationship – when two variables do the opposite thing. If one increases, the other decreases.
- 39. proportional relationship – when one quantity changes by a certain factor, the other quantity changes by the same factor. For example, $y = Ax$, where y and x are variables and A is a constant.
- 40. quadratic relationship – when one quantity changes by a certain factor, the other quantity changes by the square of that factor. For example, $y = Ax^2$, where y and x are variables and A is a constant.