

# AP Physics

## AP Test and Exam Key Words

Students are expected to show their work in the spaces provided for the solution for each part of a free-response question. If they need more space, they should clearly indicate where the work is continued or they may lose credit for it. If students make a mistake, they may cross it out or erase it. Crossed-out work and any work shown on the green insert will not be scored, and credit may be lost for incorrect work that is not crossed out.

In scoring the free-response sections, credit for the answers depends on the quality of the solutions and the explanations given; partial solutions may receive partial credit, so students are advised to show all their work. Correct answers without supporting work may lose credit. This is especially true when students are asked specifically to justify their answers, in which case the grader is looking for some verbal or mathematical analysis that shows how the students arrived at their answers. Also, all final numerical answers should include appropriate units.

On the AP Physics Exams the words “explain,” “justify,” “calculate,” “what is,” “determine,” “derive,” “sketch,” and “plot” have precise meanings. Students should pay careful attention to these words in order to obtain maximum credit and should avoid including irrelevant or extraneous material in their answers.

**EXPLAIN** and **JUSTIFY** indicate that the student should support the answer with prose, equations, calculations, diagrams, or graphs. The prose or equations may in some cases refer to fundamental ideas or relations in physics, such as Newton’s laws, conservation of energy, Gauss’s law, or Maxwell’s equation. In other cases, the justification or explanation may take the form of analyzing the behavior of an equation for large or small values of a variable in the equation.

**WHAT IS** and **DETERMINE** indicate that work need not necessarily be explicitly shown to obtain full credit. Showing work leading to answers is a good idea, as it may earn a student partial credit in the case of an incorrect answer, but this step may be skipped by the confident or harried student.

**CALCULATE** means that a student is expected to show work leading to a final answer, which may be algebraic but more often is numerical.

**DERIVE** is more specific and indicates that the students need to begin their solutions with one or more fundamental equations, such as those given on the AP Physics Exam equation sheet. The final answer, usually algebraic, is then obtained through the appropriate use of mathematics.

**SKETCH** a graph that illustrates trends in a particular relationship. Graphs will be evaluated for slope, curvature, intercepts and asymptotes. Numerical scaling or specific data points may be required.

**PLOT** the data on the provided grid. Graphed data will be evaluated for line of best fit, slope, intercepts and asymptotes. Slope calculations may be required along with unit analysis.