

Overview

Beyond knowing the physics, it helps to know what types of multiple-choice questions to expect on the AP[®] Physics 1 exam. The following categories appear in the 15 Sample Exam Questions from the [AP Physics[®] 1 Course and Exam Description](#), plus two additional categories not represented in the sample questions.

Multiple-Choice Question Categories

- **Equation (or expression) answer:** Manipulate equations to arrive at a mathematical expression or equation as the answer. This is one of the most common question types. (CED Questions 1, 6, 8, 14)
- **Free-body diagram answer choices:** Answer choices are free-body diagrams drawn on a grid. Pay attention to the grid: it shows the relative magnitudes of forces, so you can check whether force components cancel by counting boxes. You are almost guaranteed to see this question type. (CED Question 2)
- **Solution/reason:** Each answer choice contains a mathematical relationship (the solution) followed by a written justification (the reason). First narrow down which solution is correct, then determine which of the remaining answer choices has the correct reason. (CED Questions 3, 11)
- **Graph in the prompt:** A graph is provided in the question prompt. More than one-fourth of the CED sample questions use graphs. One prompt can apply to multiple questions. (CED Questions 4, 5, 9, 14)
- **Rank a variable:** Determine the relative sizes of variables and compare them using inequality signs. Read the signs carefully; they are not always greater-than signs. (CED Question 4)
- **Graph answer choices:** All four answer choices are graphs. Interpret which graph best represents the answer. (CED Question 5)
- **Compare values (table format):** Answer choices are arranged in a table. You must determine the correct relationship for two or more quantities simultaneously and select the answer choice that is correct for all of them. Watch for questions that also change the system being analyzed (e.g., including or excluding Earth from the system). (CED Questions 7, 10)
- **Equation answer with “impossible to determine”:** A standard equation answer question with “impossible to determine” as one of the choices. Do not assume it is always correct; learn the physics and determine the right answer. (CED Question 8)
- **Number answer:** Answer choices are numbers. Plug in values from the problem statement and read values off any graph provided. When the question says “most nearly,” your calculated answer may not exactly match an answer choice, but it should be the closest one. (CED Questions 9, 13)

- **Which statement is true:** Four written statements are given and only one is correct (or most nearly correct). Read carefully; the correct answer can hinge on subtle wording such as whether the word “magnitude” is used. The AP Physics 1 exam is a reading exam as much as a physics exam. (CED Question 12)
- **Ratio answer:** Looks like a number answer question but the answer is a ratio, making it essentially an equation answer in disguise. (CED Question 15)
- **Estimate a location in a figure:** A figure is provided and you must identify a location within it. Common with center-of-mass questions (e.g., locate the center of mass of a multi-object system, or the final position of a system after one object moves). Also appears as identifying which location on a graph has the largest magnitude slope. (Not in CED sample questions)
- **Estimate a direction in a figure:** A figure is provided and you must identify the direction of a force, net force, or the direction an object will move after an event. (Not in CED sample questions)

Key Takeaways for Graph Questions

- For any graph, the slope equals the change in the vertical variable divided by the change in the horizontal variable. Match that ratio to an equation on the reference sheet to identify the physical significance of the slope.
- Rearranging a slope equation gives an area equation. For example, acceleration = change in velocity / change in time, so the area under an acceleration vs. time graph is change in velocity. Use this approach with any applicable equation on the reference sheet.
- The area “under” a curve means: area above the horizontal axis is positive and area below the horizontal axis is negative. The total area can be zero if the positive and negative regions cancel.
- When a graph shows dots (collected data) rather than a line (ideal data), questions will often use the phrase “best estimates” because you must draw an imaginary best-fit line through the data to find the slope or area.