StepByStep
SCIENCE PUBLISHING

# Is AP Physics 1 Right for Your Homeschool Student?

## A Planning Checklist + Two Worked Sample Problems

A free, practical resource for families weighing AP-level high-school physics

Secular, evidence-based, and written for independent learners

### What this checklist is for

This short PDF helps a homeschool family decide whether AP Physics 1 is a good fit for the coming school year. It stands on its own as a planning aid: a readiness checklist, a decision guide, the four logistical facts that catch families out, a pacing frame, a weekly practice rhythm, and two fully worked sample problems. Read it, use it, and keep it — whether or not you ever buy anything. Every statement about the exam is keyed to a College Board page in the source table on the last page.

### A quick fit check

AP Physics 1 usually works well when a student can sustain algebra-heavy problem solving, explain reasoning in words, and learn comfortably from diagrams and graphs. Calculus is *not* required, but the student should be ready to move between a story, a picture, a graph, and an equation.

Prepared by Jakub Jan Borkała, PhD — StepByStep Science Publishing.
Exam facts verified against College Board pages in September 2026.

# Who AP Physics 1 Fits — and What It Really Asks

AP Physics 1 is a first-year, algebra-based physics course. It rewards students who enjoy reasoning through problems rather than memorizing facts. Before committing a homeschool year to it, it helps to be clear about what the course does — and does not — require. Honest expectations prevent a frustrating year.

### What AP Physics 1 does *not* require

- **No calculus.** The math is algebra and a little right-triangle trigonometry; derivatives and integrals are not used. The published prerequisites are geometry, plus Algebra II either already finished or taken alongside the course.[1]
- **No prior physics.** It is designed as a first physics course, and a previous physics class is not among those published prerequisites.[1]
- **No memorizing dozens of formulas.** An equation sheet is supplied during the exam.[2] The skill being tested is choosing and applying the right relationship, not recall.
- **No costly equipment** for the hands-on work — though the hands-on work itself is not optional. The next box says exactly what is expected.

### The lab expectation, stated plainly

This is the part a homeschool plan most often leaves until it is awkward. The College Board's course audit page for AP Physics 1 describes roughly **25% of instructional time** spent on hands-on laboratory work, documented in a **lab portfolio or notebook**, with that work **supervised by someone who teaches science** — and it notes that a college may ask to see the portfolio before granting credit for the laboratory component of its own introductory course.[3]
None of that requires expensive equipment. It does require a record kept as you go, which is far easier to start in week 1 than to reconstruct in April. Two decisions worth making before the year begins: who supervises the lab work, and where the notebook physically lives.

What the course *does* ask of the student is steady algebra, patience with multi-step word problems, and a willingness to explain reasoning in writing. The checklist below turns that into something concrete.

## Readiness Checklist

Use this as a conversation starter, not a gatekeeping test. A student can begin AP Physics 1 while still strengthening some of these skills, but the year runs much more smoothly when most boxes already feel comfortable.

### Before starting AP Physics 1

- ☐ **Algebra fluency:** solve linear and quadratic-looking equations, rearrange symbolic formulas, and keep units attached to numbers.
- ☐ **Basic trigonometry:** use sine, cosine, and tangent for right-triangle components such as $v_x = v\cos\theta$ and $v_y = v\sin\theta$.
- ☐ **Graph reading:** identify slope, area, and intercepts, and say what a sign change means on position–time, velocity–time, and force–time graphs.
- ☐ **Word-problem stamina:** read a multi-part prompt, decide which system is being analyzed, and resist grabbing equations too early.
- ☐ **Weekly practice habits:** work problems several times a week, correct mistakes, and write short justifications in complete sentences.
- ☐ **Representation comfort:** sketch free-body diagrams, motion diagrams, energy bars, or graphs before solving.

## A Simple Decision Guide

| Where the student is | What it looks like | A reasonable next step |
|---|---|---|
| **Ready now** | Algebra and graph reading are steady; the student can explain *why* an equation applies. | Start AP Physics 1 with weekly MCQ and FRQ practice from week 1. |
| **Almost ready** | The main ideas are there, but graphs, trig components, or written reasoning still feel slow. | Spend 2–4 weeks on prerequisites while beginning Unit 1 gently. |
| **Wait or prepare first** | Algebra is fragile, word problems cause shutdown, or graph interpretation has not been practiced yet. | Build a foundations block first; AP pacing can come later in the year. |

### A parent-friendly rule of thumb

If the student can look at a simple graph and say "the slope means acceleration," or look at a force diagram and say "these are the forces *on* the object, not the forces *by* it," they are already developing the reasoning AP Physics 1 rewards.

## Four Things That Are Not About Physics

What most often derails a homeschool AP year is administrative rather than academic. These four facts come from College Board pages and are listed here because the calendar you build depends on them — not because we can do any of it for you.

### Before you plan the year

| | |
|---|---|
| **Who registers the student** | **Not the family.** An AP Exam cannot be ordered directly by a student or a parent. The student has to be added to a *school's* exam order by that school's AP coordinator, who sets up an "exam only" section and issues a join code for My AP. Schools are located through the AP Course Ledger.[4] Allow real time for this step: it is a conversation with a school, not a form you can fill in. |
| **The dates** | **November 13, 2026, 11:59 p.m. ET** is the final deadline for schools to order exams for the 2026–27 year. A homeschooled student who reaches a school after that date can still be added *without* the late-order fee, and the coordinator may request a waiver of it up to **March 12, 2027** — the date by which the student must be in the order.[4] The exam itself is **Wednesday, May 5, 2027**, in the second testing session of that day.[2] |
| **The money** | The base 2027 exam fee is **$99**, with a **$37 reduction** for students who qualify. A school may add a charge of its own for proctoring.[5] |
| **Exam day** | **Hybrid digital.** The multiple-choice section and the free-response prompts appear in the Bluebook application, but free-response answers are **written by hand** in a paper booklet that is returned for scoring. An approved calculator is permitted, and the equation sheet is provided.[2] |

### Said plainly

We are an independent publisher. We have no affiliation with the College Board and we cannot register a student for an exam — only a school's AP coordinator can do that. Every fact in the box above is taken from the College Board pages listed on the last page of this PDF, checked in September 2026. Deadlines and fees are set per year: confirm them for your own year before you rely on them.

## A Homeschool Pacing Frame

A full AP Physics 1 year needs room for concepts, problem solving, lab and data skills, and mixed review. For many homeschool families, a 30–34 week plan is a workable starting point — adjust the boundaries to fit your calendar.

Anchor the plan to the exam date rather than to the school year. Counting forward from a start in the last week of August 2026, 34 weeks of instruction end in the third week of April 2027, which leaves a short buffer before the May 5 exam. A start after the first week of September leaves no buffer at all — so a later start is a reason to plan 30 weeks rather than 34, not a reason to compress the review block.

**Suggested 30–34 week structure**

| | |
|---|---|
| **Weeks 1–4** | Kinematics: vectors, motion graphs, and the habit of defining variables clearly. |
| **Weeks 5–10** | Forces: free-body diagrams, Newton's laws, friction, springs, and circular motion. |
| **Weeks 11–16** | Work, energy, power, impulse, momentum, and collisions. |
| **Weeks 17–23** | Torque, rotational motion, rotational energy, angular momentum, and rolling. |
| **Weeks 24–28** | Oscillations and fluids, with extra time for graphs, data, and qualitative reasoning. |
| **Weeks 29–34** | Mixed review: cycle old units back in, practice FRQ fragments, and correct recurring mistakes. |

## A Weekly Practice Rhythm

Good AP Physics 1 practice is a system, not a scramble. A light, repeatable weekly routine builds far more skill than occasional long cram sessions.

| Each week | Why it helps |
|---|---|
| 6–10 MCQs | Build speed, concept recognition, and careful reading under time pressure. |
| 1 FRQ fragment | Practice explaining physics in words before diving into long calculations. |
| 1 representation task | Draw a free-body diagram, graph, motion sketch, energy chart, or momentum chart. |
| 1 error-log pass | Rewrite each mistake in plain language: "I confused velocity with acceleration," or "I forgot the normal force changed." |

**Why the rhythm matters**

AP Physics 1 is not mainly about memorizing formulas. Students improve when they repeatedly connect four representations — words, diagrams, equations, and graphs. The two worked samples that follow show that habit in miniature: one reads a graph, and one moves from a picture to a derivation to a number.

## How to read the two worked samples

The next two pages show a solved multiple-choice question and a solved free-response question. When you and your student read them, notice the reasoning habits worth copying — they matter more than the final answers.

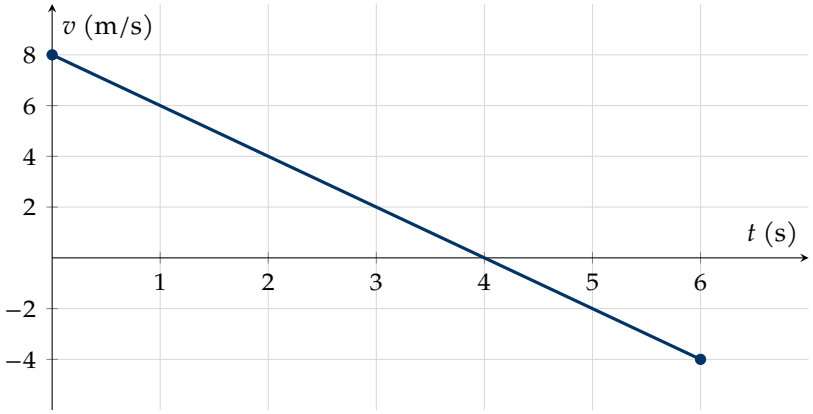
**What to look for**

- **The fast path first.** A well-prepared student reaches a multiple-choice answer in a minute or two along one clean line of reasoning, not a full re-derivation.
- **Why the wrong answers are tempting.** Each incorrect choice is tied to a specific, common misconception. Learning to name the trap is often more useful than getting the right answer once.
- **The five-step method on free response.** Identify what is given, represent it with a diagram, solve from a stated principle, then evaluate the result (units, reasonableness, limiting cases).
- **Words alongside math.** Notice how each step is explained in a sentence. On the exam, unexplained algebra loses credit; a short justification earns it.

# Worked Sample 1: A Multiple-Choice Question

**Sample MCQ (Unit 1: Kinematics)** *Topic 1.3 · Skill 3.B*

The velocity–time graph below shows the motion of an object along a straight line.




Which of the following statements about the object's motion is correct?

(A) The object changes direction at $t = 4\,\text{s}$ and has a constant acceleration throughout the motion.

(B) The object changes direction at $t = 4\,\text{s}$ and has a changing acceleration throughout the motion.

(C) The object is momentarily at rest at $t = 4\,\text{s}$ but does not change direction.

(D) The object has zero acceleration at $t = 4\,\text{s}$.

**A** **Fast Path:** The graph is a straight line, so the acceleration is constant:

$$a = \frac{v_f - v_i}{t_f - t_i} = \frac{(-4) - 8}{6 - 0} = -2\,\text{m/s}^2.$$

The velocity crosses zero at $t = 4\,\text{s}$. Because $v$ changes sign from positive to negative, the object reverses direction at that instant.

**(B)** × Correctly spots the direction change, but a straight velocity–time line has a constant slope, so the acceleration is constant — not changing.

**(C)** × Notices that $v = 0$ at $t = 4\,\text{s}$ but misses that the *sign* of $v$ changes. A sign change in velocity means a direction change.

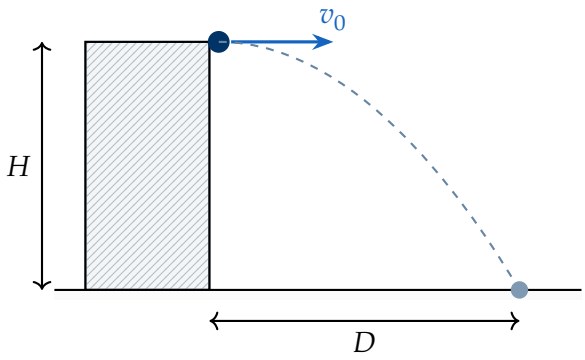
**(D)** × Confuses zero velocity with zero acceleration. Acceleration is the slope of the graph, and here the slope is nonzero.

**Key Principle:** On a velocity–time graph, the slope is the acceleration, and a change in the sign of the velocity signals a reversal of direction.

# Worked Sample 2: A Free-Response Question

**Sample FRQ (Unit 1: Kinematics)** *Projectile Motion · Mathematical Routines*

A ball is launched horizontally from the edge of a cliff of height $H$ with initial speed $v_0$. Air resistance is negligible.




(a) Draw the force acting on the ball while it is in the air, then derive the time $t$ to reach the ground and the horizontal distance $D$.

(b) Calculate $D$ for $H = 45\,\text{m}$ and $v_0 = 12\,\text{m/s}$.

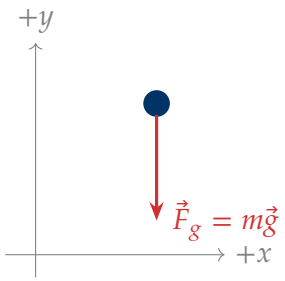
(c) A second ball of mass $2m$ is launched with the same $v_0$ from the same height. State whether it lands farther, closer, or the same distance away, and justify your answer.

## Identify

**Given:** Horizontal launch speed $v_0$, cliff height $H$, negligible air resistance.
**Find:** Force diagram, time of flight $t$, horizontal distance $D$, the numerical value of $D$, and the effect of doubling the mass.
**System:** The ball, treated as a point particle after it leaves the cliff.
**Model:** Projectile motion — vertical acceleration is $g$ downward, horizontal acceleration is zero.

## Represent

Once the ball leaves the cliff, only gravity acts on it. There is no forward "force of motion."



## Solve

**Vertical motion sets the time.** Start from a fundamental kinematic relationship:

$$y = y_0 + v_{y0}\,t + \tfrac{1}{2}a_y t^2.$$

Take the launch point as $y_0 = 0$ with upward positive. At the ground $y = -H$; the launch is horizontal, so $v_{y0} = 0$ and $a_y = -g$:

$$-H = 0 + 0 \cdot t + \tfrac{1}{2}(-g)t^2 \;\Rightarrow\; H = \tfrac{1}{2}gt^2 \;\Rightarrow\; \boxed{t = \sqrt{\frac{2H}{g}}}.$$

**Horizontal motion sets the distance.** Since $a_x = 0$, the horizontal speed stays $v_0$:

$$D = v_0 t \;\Rightarrow\; \boxed{D = v_0\sqrt{\frac{2H}{g}}}.$$

**Numerical value.**

$$D = (12\,\text{m/s})\sqrt{\frac{2(45\,\text{m})}{9.8\,\text{m/s}^2}} = (12\,\text{m/s})(3.03\,\text{s}) \approx \boxed{36\,\text{m}}.$$

## Evaluate

- **Units:** $(\text{m/s})(\text{s}) = \text{m}$, so $D$ carries the correct unit.
- **Reasonableness:** a fall of about 3.0 s from 45 m is sensible, and at 12 m/s the ball travels about 36 m horizontally.
- **Mass check (part c):** doubling the mass leaves $D$ unchanged. Gravity is the only force, so $a = F_g/m = mg/m = g$, independent of mass. With the same $H$, $v_0$, and $g$, the second ball lands the *same* distance away.

**Key Principle:** In projectile motion with negligible air resistance, the horizontal and vertical motions are independent. The height sets the time in the air; the horizontal speed sets how far the ball travels in that time — and the mass does not affect either.

## Where These Facts Come From

Every statement in this PDF about prerequisites, deadlines, fees, the exam day or the laboratory expectation is taken from one of the five College Board pages below, and from nothing else. No aggregator, forum post or score calculator was used. Each was opened and checked in **September 2026**.

### College Board sources, checked September 2026

| | Page | What it supports here |
|---|---|---|
| [1] | AP Physics 1: Algebra-Based — AP Students course page | Prerequisites: geometry completed; Algebra II completed or taken concurrently. No prior physics course listed. |
| [2] | AP Physics 1 Exam — AP Central | Exam date and session; the hybrid digital format, with free-response answers handwritten in a paper booklet; calculator policy; the supplied equation sheet. |
| [3] | AP Physics 1 Course Audit — AP Central | About 25% of instructional time on hands-on laboratory work; lab portfolio or notebook; supervision by a science teacher; a college may ask to see the portfolio before granting laboratory credit. |
| [4] | Ordering exams for students who do not attend your school — AP Central | Families cannot order an exam; AP Course Ledger; "exam only" section and join code; the November 13, 2026 order deadline; the homeschool exception and the March 12, 2027 backstop. |
| [5] | AP Exam Fees — AP Students | The 2027 base fee of $99 and the $37 reduction for eligible students. |

The full addresses are:
[1] apstudents.collegeboard.org/courses/ap-physics-1-algebra-based
[2] apcentral.collegeboard.org/courses/ap-physics-1/exam
[3] apcentral.collegeboard.org/courses/ap-physics-1/course-audit
[4] apcentral.collegeboard.org/exam-administration-ordering-scores/ordering-fees/ordering-exam-materials/special-ordering-circumstances/students-other-study
[5] apstudents.collegeboard.org/exam-policies-guidelines/exam-fees

### Why this page exists

Dates and fees are reset every year, and out-of-date planning advice is worse than none: a family that trusts an old deadline misses the real one. So this PDF names its sources, dates the check, and is reviewed each August against the same five pages. If a claim here disagrees with a College Board page, the College Board page is right.

# About This Checklist

The two worked problems are adapted from *AP Physics 1: Algebra-Based Practice Workbook* by Jakub Jan Borkała, PhD. The free-response problem has been condensed for length while keeping the Identify → Represent → Solve → Evaluate reasoning style intact.

**Transparent disclosure**

Written and published by **Jakub Jan Borkała, PhD — StepByStep Science Publishing**, an independent publisher with no affiliation to the College Board. I am the author of the workbook mentioned below, so treat what follows as coming from an interested party. This PDF is meant as a free planning aid for homeschool and independent-learning families considering AP Physics 1, and it is useful on its own whether or not you buy the book.

## If your student wants more practice like this

The two samples above show one problem of each type. A full year of study needs many more, across every unit. For families who want that, the workbook continues in the same step-by-step style:

- **183 worked problems** in total — **138 multiple-choice questions** and **45 free-response questions**;
- each MCQ solved with a fast exam-speed path plus an explanation of why each wrong choice is tempting;
- each FRQ worked through the same Identify, Represent, Solve, and Evaluate steps you saw here;
- coverage of all 8 current AP Physics 1 units, including fluids;
- diagrams, free-body diagrams, graphs, and per-chapter exam-readiness notes.

The value is one consistent system a student can work through week by week, with a full solution behind every problem — so a homeschool parent is never left guessing how an answer was reached.

**Where to find the full workbook**

**AP Physics 1: Algebra-Based Practice Workbook** — by Jakub Jan Borkała, PhD
https://www.amazon.com/dp/8398112816



Selected samples: a velocity–time graph MCQ (Topic 1.3) and a condensed adaptation of a projectile-motion FRQ, both from Unit 1, Kinematics.