AP® Physics C: Mechanics
2002 Scoring Commentary

The materials included in these files are intended for use by AP teachers for course
and exam preparation in the classroom; permission for any other use must be
sought from the Advanced Placement Program®. Teachers may reproduce them, in
whole or in part, in limited quantities, for face-to-face teaching purposes but may
not mass distribute the materials, electronically or otherwise. These materials and
any copies made of them may not be resold, and the copyright notices must be
retained as they appear here. This permission does not apply to any third-party
copyrights contained herein.

These materials were produced by Educational Testing Service® (ETS®), which develops and administers the examinations of the Advanced Placement Program for the College Board. The College Board and Educational Testing Service (ETS) are dedicated to the principle of equal opportunity, and their programs, services, and employment policies are guided by that principle.

The College Board is a national nonprofit membership association dedicated to preparing, inspiring, and connecting students to college and opportunity. Founded in 1900, the association is composed of more than 4,200 schools, colleges, universities, and other educational organizations. Each year, the College Board serves over three million students and their parents, 22,000 high schools, and 3,500 colleges, through major programs and services in college admission, guidance, assessment, financial aid, enrollment, and teaching and learning. Among its best-known programs are the SAT®, the PSAT/NMSQT®, and the Advanced Placement Program® (AP®). The College Board is committed to the principles of equity and excellence, and that commitment is embodied in all of its programs, services, activities, and concerns.

Copyright © 2002 by College Entrance Examination Board. All rights reserved. College Board, Advanced Placement Program, AP, SAT, and the acorn logo are registered trademarks of the College Entrance Examination Board. APIEL is a trademark owned by the College Entrance Examination Board. PSAT/NMSQT is a registered trademark jointly owned by the College Entrance Examination Board and the National Merit Scholarship Corporation. Educational Testing Service and ETS are registered trademarks of Educational Testing Service.
Question 1

Sample 1 (Score 15)

In part (b), this student’s use of the integral earns the point for knowing velocity is the time derivative of position. The rest of the solution is straightforward.

Sample 2 (Score 12)

This student earns no credit for part (b), but the other responses are correct.

Question 2

Sample 1 (Score 15)

In part (e), this student uses conservation of momentum for the inelastic collision to explain a smaller velocity after the collision.

Sample 2 (Score 15)

This student explicitly explains the energy considerations relating to the compression of the spring.

Question 3

Sample 1 (Score 15)

This is an excellent paper, with a clear and complete description of the experimental setup and measurement.

Sample 2 (Score 13)

This student loses 1 point in part (a) because the graph goes below 0.5 J at $x = 5$ m. Another point is lost in part (e) because the student did not explicitly explain how measuring the spring compression would allow determination of the glider’s speed.