

- Because many courses for non-science majors do not have a laboratory component, **home experiments and observations** are found at the end of each chapter. The spirit of these home experiments is to enable students to explore the behavior of physical phenomena using easily available rulers, string, paper clips, balls, toy cars, flashlight batteries, and so on. Many instructors have found them useful for putting students into the exploratory and observational frame of mind that is important to scientific thinking. This is certainly one of our objectives in developing scientific literacy.

Home Experiments and Observations

home experiments and observations

- HE1. Take two marbles or steel balls of the same size and practice shooting one into the other. Make these observations:
- If you produce a head-on collision with the second marble initially at rest, does the first marble come to a complete stop after the collision?
 - If the collision with a second marble occurs at an angle, is the angle between the paths of the two marbles after the collision a right angle (90°)?
 - If marbles of different sizes and masses are used, how do the results of parts a and b differ from those obtained with marbles of the same mass?
- HE2. If you have access to a pool table, try parts a and b of the observations in home experiment 1 on the pool table. What effect does putting spin on the first ball have on the collision?
- HE3. If you have both a basketball and a tennis ball, try dropping the two of them onto a floor with a hard surface, first individually and then with the tennis ball placed on top of the basketball before the two are dropped together.
- Compare the height of the bounce of each ball in these different cases. The case where the two are dropped together may surprise you.
- Can you devise an explanation for these results using impulse and Newton's third law? (Consider the force between the basketball and the floor as well as that between the tennis ball and the basketball for the case where they are dropped together.)
- HE4. Place a cardboard box on a smooth tile or wood floor. Practice rolling a basketball or soccer ball at different speeds and allowing the ball to collide with the box. Observe the motion of both the box and the ball just after the collision.
- How do the results of the collision vary for different speeds of the ball (slow, medium, fast)?
 - If we increase the weight of the box by placing books inside, how do the results of the collision change for the cases in part a?
 - Can you explain your results using conservation of momentum?

“The selection of problems and questions at the end of each chapter is excellent. They provide students with a comprehensive review of the chapters and at the same time present challenges to reinforce the concepts. . . . Many students taking an introductory physics course do not have a chance to take a lab component with the course. The home experiments can go a long way toward addressing this deficiency.”

—Farhang Amiri,
Weber State University

Supplements

Text Website

A text-specific website that provides students with useful study tools designed to help improve their understanding of the material presented in the text and class. For the instructor, the website is designed to help ease the time burdens of the course by providing valuable presentation and preparation tools.

For Students

Student Study Guide Integration

- Mastery Quiz
- Know
- Understand
- Study Hints
- Practice Problems
- Answers to Selected Questions

Animations

Crossword Puzzles

Links Library

Chapter Summary

Chapter Objectives

For Instructors

All Student Content

PowerPoint Lectures

Instructor's Manual

Sample Syllabi

CPS eInstruction Questions for Personal Response Systems

Powerpoints of Art and Photos from the Text

Test Bank

Formula Summaries

Personal Response Systems

Personal Response Systems (clickers) can bring interactivity into the classroom or lecture hall. Wireless response systems give the instructor and students immediate feedback from the entire class. The wireless response pads are essentially remotes that are easy to use and engage students, allowing instructors to motivate student preparation, interactivity, and active learning. Instructors receive immediate feedback to gauge which concepts students understand. Questions covering the content of *The Physics of Everyday Phenomena* text are formatted in PowerPoint are available on the text website.

Computerized Test Bank Online

A comprehensive bank of test questions is provided on the text website within a computerized test bank powered by McGraw-Hill's flexible electronic testing program EZ Test Online (www.eztestonline.com). EZ Test Online allows you to create paper and online tests or quizzes in this easy to use program!

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