Practice Test

Introductory Physics

HIGH SCHOOL

Student Name

School Name

District Name

MASSACHUSETTS DEPARTMENT OF
ELEMENTARY AND SECONDARY
EDUCATION

This is a practice test. Your responses to practice test questions must be recorded on your Practice Test Answer Document.

Mark only one answer for each multiple-choice question. If you are not sure of the answer, choose the answer you think is best.

HOW TO ANSWER OPEN-RESPONSE QUESTIONS

- Read all parts of each question carefully.
- Make each response as clear, complete, and accurate as you can.
- Support your responses.
- Check your answers.

Introductory Physics

DIRECTIONS

This practice test contains two multiple-choice questions and one open-response question. Mark your answers to these questions in the spaces provided on page 4 of your Practice Test Answer Document.

1 Which of the following is a similarity between x-ray waves and sound waves?

A. Both transfer energy.

B. Both travel through a vacuum.

C. Both have the same speed.

D. Both have the same frequency.

2 A car moves at a constant velocity for 4 s. A student records data on the car's motion, as shown in the table below, but the student forgets to label the second column of the table.

Time (s)	**?**
1	30
2	60
3	90
4	120

Which of the following is the missing label?

A. **Acceleration (m/s^2)**

B. **Distance (m)**

C. **Force (N)**

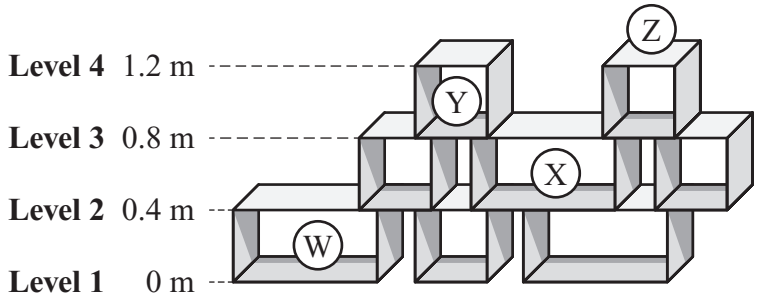
D. **Speed (m/s)**

Question 3 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Practice Test Answer Document.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 3 in the space provided on page 4 of your Practice Test Answer Document.

3 The figure below shows a shelving system with four levels. The height of each level is shown in the diagram, and four locations are labeled W, X, Y, and Z.



A person places an object on the shelves.

a. At which location on the shelves (W, X, Y, or Z) would the object have the most gravitational potential energy? Explain your answer.

A book with a mass of 0.21 kg is placed at location X. A magazine with a mass of 0.11 kg is placed at location Y.

b. Does the book or the magazine have more potential energy? Show your calculations and include units in your answer.

A 2.5 kg object is placed at location X where it has 10 J of potential energy. A person bumps the shelf, causing the object to fall to the ground.

c. Assuming air resistance is negligible, explain how conservation of energy is demonstrated as the object falls to the ground.

d. Calculate the speed of the 2.5 kg object just before it hits the ground. Show your calculations and include units in your answer.

STOP!

MASSACHUSETTS COMPREHENSIVE ASSESSMENT SYSTEM

High School Introductory Physics

Practice Test Answer Document

School Name:_____ District Name:_____ Last Name of Student:_____ First Name of Student:_____	**Marking Instructions** • Use a No. 2 pencil only. • Do not use ink, ballpoint, or felt tip pens. • Make solid marks that fill the circles completely. • Erase cleanly any marks you wish to change. • Make no stray marks on this form. • Do not fold, tear, or mutilate this form.

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ

3.

STOP!

NO TEST MATERIAL
ON THIS PAGE