Chapters/ Sections will be Covered

Book: Fundamentals of Physics by David Halliday, Jearl Walker, and Robert Resnick

Chapter Title: Measurement, Motion along a straight line

Sections:

The international system of units

Motion
Position & displacement
Average velocity & average speed

Sample Quiz Questions: Measurements

How physical quantities are calculated to describe the laws of physics?
(a) By description
(b) Explaining physical phenomena
(c) Set up a standard and a unit
(d) Qualitative understanding

How are units used to measure an object?
(a) Setting up a reference standard
(b) Qualitative explanation
(c) Understanding the physical phenomena
(d) Eliminating physical quantity

Sample Quiz Questions: Measurements

If mass, time, and length have dimensions $[M]$, $[T]$, and $[L]$ respectively, what is the dimension of speed?
(a) [M/T]
(b) [L/T]
(c) [M/L]
(d) 1

Why distance is a scalar quantity?
(a)It has an initial and final position
(b)It calculates the total length
(c)It sums up all the initial and final positions
(d)It shows some angle in the path

Sample Quiz Question: Motion along a straight line

A coach is tracking his sprinter while running on the field using a stopwatch. What quantity is useful for him to improve the performance of the sprinter?
(a)Average speed
(b)Position
(c)Distance
(d)Average velocity

Ford Mustang does not run well in snowy conditions. If a customer wants to check its performance what is the valuable quantity to look at: (a) distance, (b) displacement, (c) average speed, (d) average velocity?

Sample Quiz Question: Motion along a straight line

A position vs time graph is sketched for tracking the movement of a deer in a forest where the graph shows (a) steeper, (b) turn, (c) wavy, (d) spiral-like sections. Which section has the maximum average velocity?

What is the dimension of the product of average velocity and time interval?
(a)Average acceleration
(b)Average speed
(c)Distance
(d)Positions

Sample Quiz Question: Motion along a straight line

What is denoted by the product of average speed and total time taken by a particle that travels?
(a)Average velocity
(b)Initial and final position
(c)Total length
(d)Average time

A food delivery boy delivers the first order at A $(25\ m)$, the second at B $(5\ m)$, and the third at C $(12\ m)$ and then returns to the start position. What is the net displacement of the delivery boy?
(a) $42\ m$ (b) $18\ m$ (c) $0\ m$ (d) $8\ m$

Class Activity: Math Problem #1

A boy is playing a 'game of catch' with a dog. The dog is initially standing near the boy's feet. Then he jogs 20 feet in a straight line to retrieve a stick and carries the stick 15 feet back toward the boy before lying on the ground to chew on the stick.

(a)What is the total distance the dog travels?

(b)What is the net displacement of the dog?

(c)Show that the net displacement for the trip is the sum of the sequential displacements that make up the trip.

Class Activity: Math Problem #2

A car and pickup truck are moving on a street opposite each other.

(a)A car starts moving and its position is at $(x_1, t_1) = (19\ m, 1.0\ s)$. After 4.0 s, the vehicle is at $x_2 = 277\ m$. Find the average velocity of the car.

(b) On the same street, a pickup truck position is at $(x_1, t_1) = (277\ m, 16.0\ s)$. The truck is at position, $x_2 = 19m$ while the time was $t_2 = 25.0\ s$. What is the average velocity of the vehicle?