

Assignment Sheet
Linear Motion

Objectives

You will be able to:

- A. Use the mks system of measurements.
Use the factor-label method for converting units and for calculations involving units.
Use significant digits when taking measurements in lab. (In general, we'll apply a "close enough" rule for their use in calculation and not be too formal about sig figs in calculations)
Use proper scientific notation.
Create graphs using independent and dependent variables on paper and in a spreadsheet (No, for the record, which spreadsheet you use generally doesn't matter as long as you know how to use it)
- B. Explain how position is related to a coordinate system.
Explain the meaning of sign in displacement.
Distinguish between distance and displacement.
- C. Distinguish between speed and velocity.
Relate distance to displacement (change in position) and speed to velocity.
Distinguish between instantaneous and average speed.
Interpret average and instantaneous velocity graphically.
- D. Explain the concept of average and instantaneous acceleration.
Explain the meaning of the units of acceleration and velocity.
- E. Explain the "7 types of motion" (horizontally or vertically).
Explain the graph associated with each "type" of motion.
Draw graphs of position vs. time and velocity vs. time.
Use correct units when describing position, velocity, and acceleration.
- F. Apply the equations of uniformly accelerated motion to solve problems, including free fall

Reading

- A. 1-2 Units of Length, Mass, and Time, p. 2–4
1-3 Dimensional Analysis, p. 4–5
1-4 Significant Figures, p. 5–8
1-5 Converting Units, p. 8–10
- B. 2-1 Position, Distance, and Displacement, p. 18–20
- C. 2-2 Average Speed and Velocity, p. 20–24
2-3 Instantaneous Velocity, p. 24–26
- D. 2-4 Acceleration, p. 26–30
- E. 2-5 Motion with constant acceleration, p. 30–35
- F. 2-6 Application of the Equations of Motion, p. 36–38
2-7 Freely Falling Objects, p. 39–45

Written Homework ***Study notes and read text nightly***

Assignments as necessary to support class work and reading (as given on board and website)

Focus Questions:

1. What is the difference between a position and a distance? A speed and a velocity? Give an example of a case when this distinction is important.
2. You have probably included the "7 types of motion" in your chapter summary. We use this categorization as a tool to describe the world around us. Give an example of each type. Does a car "moving backwards" mean that it must be in reverse?