

UNIT 1: MOTION – AN ACCELERATED TOPIC

Upon completion of this unit, the student should be able to:

1. Explain the metric system (MKS or SI) and the various prefixes used to represent numbers.
2. Explain the scientific method and how to apply it to the writing of lab reports.
3. Construct displacement-time and velocity-time graphs from collected data manually and using a computer program. Calculate slope of graph.
4. Given a graph showing the motion of an object, describe:
 - a. the general motion of the object.
 - b. the motion of the object at any point in time.
 - c. any changes in the object's motion.
5. Define velocity and its metric units. Distinguish between average and instantaneous velocity. Calculate each from a displacement-time graph.
6. Define acceleration and its metric units. Distinguish between average and instantaneous acceleration. Calculate each from a velocity-time graph.
7. Given one of the following, sketch the other two:
 - a. displacement-time graph.
 - b. velocity-time graph.
 - c. acceleration-time graph.
8. Calculate displacement or change in velocity over given time intervals from velocity-time or acceleration-time graphs.
9. Use the equations of motion to calculate displacement, average velocity, final velocity, elapsed time, or acceleration of a moving object.
10. Define the Law of Falling Bodies and explain who formulated it.
11. Use the equations of motion to calculate the acceleration due to gravity of an object falling near Earth's surface.
12. Define terminal velocity and the factors that determine it.

Reference: Holt Physics (Serway/Faughn), Chapters 1-2

Homework: GOM 1, GOM 2, practice problem set, sketch-a-graph

Labs: Great Race, Physics 500, Graphical Analysis, Sonic Ranger, air rocket, parachutes, Graph your Route (take home lab)

BC

