

UNIT
A

Kinematics



Unit Contents

1

Constant velocity represents uniform motion.

- 1.1 Position, Motion, and Displacement
- 1.2 Speed and Velocity

2

Acceleration causes a change in velocity.

- 2.1 Acceleration
- 2.2 Analyzing Graphs to Study Motion
- 2.3 Equations for Uniform Acceleration (Kinematic Equations)

3

A projectile is an object moving in a vertical plane, under the influence of the force of gravity.

- 3.1 Acceleration due to Gravity — Free Fall
- 3.2 Two Dimensional Vectors in Motion
- 3.3 Two Dimensional Projectiles

Unit Task

Drivers approaching a traffic control signal showing an amber light are supposed to stop their vehicle if they can do so safely, otherwise they may proceed with caution. Your task is to determine if the amber traffic lights in your area give drivers enough time to cross an intersection before the lights turn red. This will be done by measuring or determining distances and time, and using the appropriate equations.

DISCOVERING PHYSICS

Motocross is an exciting sport where motorcycles race around an off road circuit. The riders experience thrilling motion such as flying through the air and negotiating sharp turns. Speed, acceleration, and braking are some factors that challenge a rider's ability. How can knowledge of motion help riders complete the circuit?

