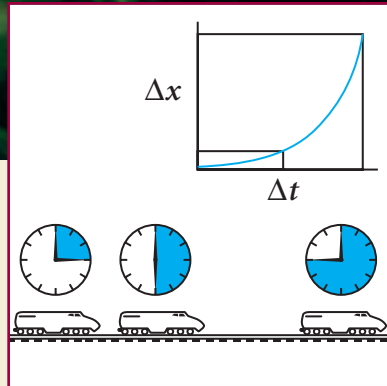


Motion in One Dimension



High-speed passenger trains such as the one shown here are used in many countries, including Japan, France, England, Germany, and South Korea. These trains have operational speeds from 200 to 300 km/h. A train moving along a straight track is an example of *one-dimensional motion*. The train in the diagram is covering greater distances in equal time intervals—in other words, it is accelerating.

WHAT TO EXPECT

In this chapter, you will learn how to analyze one-dimensional motion in terms of displacement, time, speed, and velocity. You will also learn how to distinguish between accelerated and nonaccelerated motion.

Why it Matters

Velocity and acceleration are involved in many aspects of everyday life, from riding a bicycle to driving a car to traveling on a high-speed train. The definitions and equations you will study in this chapter allow you to make predictions about these aspects of motion, given certain initial conditions.

CHAPTER PREVIEW

1 Displacement and Velocity

Motion
Displacement
Velocity

2 Acceleration

Changes in Velocity
Motion with Constant Acceleration

3 Falling Objects

Free Fall