Name

14-1 Lesson Master

Questions on SPUR Objectives
See Student Edition pages 862–865 for objectives.

USES Objectives E and G

1. Suppose that at the start of a bike race, a biker accelerated from 0 to 24 miles per hour (35.2 feet per second) in 45 seconds. During these 45 seconds, his velocity in feet per second is given by $f(x) = -0.017(45 - x)^2 + 35.2$, where x is in seconds.

   a. Fill in the missing velocity values in the table below.

Time (sec)	5	10	15	20	25	30	35	40	45
Velocity (ft/sec)									

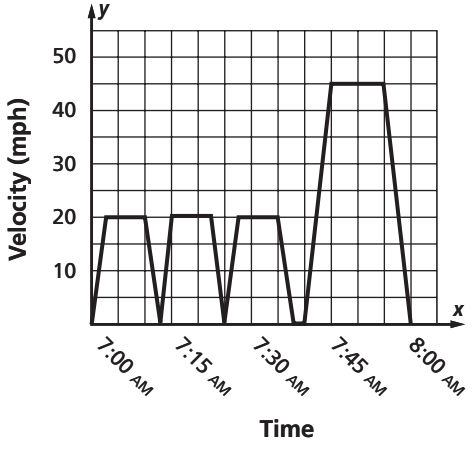
   b. Estimate the distance covered by the biker in the first 45 seconds of the race by calculating $\sum_{i=1}^{9}(5 \cdot f(5i))$. _____

2. Peter is on his way to the theater to see a movie. For 10 minutes, he walks at 2.5 miles per hour. Then he glances at his watch, realizes he is going to be late, and jogs for 5 minutes at 6 miles per hour. Then he decides that he doesn't mind missing the previews, and walks the last 5 minutes of the trip at 3 miles per hour.

   a. How far did Peter travel while jogging? _____

   b. How far did he travel in all? _____

3. To get to work each day, Katie first rides a train. After three stops, she gets off the train and boards an express bus that takes her the rest of the way to work without stopping. Katie's velocity from the time she gets on the train until the time she gets off the bus is modeled by the graph below.



   a. What is the maximum velocity of the bus? _____

   b. How long is the train at top speed between stops? _____

   c. Estimate the distance Katie travels to get to work. _____

   d. How much of that distance does Katie cover while she is on the train? _____