

EXPONENTS AND EXPONENTIAL FUNCTIONS

- ▶ *How does switching gears cause a chain reaction?*



CHAPTER

8

APPLICATION: Bicycle Racing

Shifting into high gear helps a racer increase speed on level or downhill surfaces, but pedaling becomes more difficult. When the racer exerts energy the brain sends a message to increase the rate and depth of breathing.

The relationship between breathing rate and bicycle speed can be represented with a type of mathematical model that you'll study in Chapter 8.

Think & Discuss

1. Construct a scatter plot of the data below. Draw a smooth curve through the points.

Bicycle speed, x (miles per hour)	Breathing rate, y (liters per minute)
0	6.4
5	10.7
10	18.1
15	30.5
20	51.4

2. Describe the change in breathing rate after each increase of 5 mi/h in bike speed. Does it increase by the same amount? the same percent?

Learn More About It

You will use an exponential model that relates the breathing rate to bike speed in Ex. 17 on p. 480.



APPLICATION LINK Visit www.mcdougallittell.com for more information about bicycle racing.

