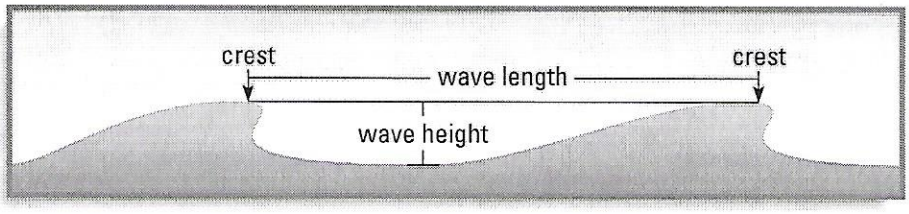
59. POPULATION OF OREGON From 1990 to 1996 the population of Oregon increased by about 60,300 people per year. In 1996 the population was about 3,204,000. Write a linear model for the population P of Oregon from 1990 to 1996. Let t represent the number of years since 1990. Then estimate the population of Oregon in 2014. ▶ Source: *Statistical Abstract of the United States*

60. AIRFARE In 1998 an airline offered a special airfare of \$201 to fly from Cincinnati to Washington, D.C., a distance of 386 miles. Special airfares offered for longer flights increased by about \$.138 per mile. Write a linear model for the special airfares a based on the total number of miles t of the flight. Estimate the airfare offered for a flight from Boston to Sacramento, a distance of 2629 miles.

61. BOOKSTORE SALES In 1990 retail sales at bookstores were about \$7.4 billion. In 1997 retail sales at bookstores were about \$11.8 billion. Write a linear model for retail sales s (in billions of dollars) at bookstores from 1990 through 1997. Let t represent the number of years since 1990. Then estimate the retail sales at bookstores in 2012. ▶ Source: American Booksellers Association

62. SCIENCE CONNECTION The velocity of sound in dry air increases as the temperature increases. At 40°C sound travels at a rate of about 355 meters per second. At 49°C it travels at a rate of about 360 meters per second. Write a linear model for the velocity v (in meters per second) of sound based on the temperature T (in degrees Celsius). Then estimate the velocity of sound at 60°C. ▶ Source: *CRC Handbook of Chemistry and Physics*

63. BREAKING WAVES The height h (in feet) at which a wave breaks varies directly with the wave length l (in feet), which is the distance from the crest of one wave to the crest of the next. A wave that breaks at a height of 4 feet has a wave length of 28 feet. Write a linear model that gives h as a function of l. Then estimate the wave length of a wave that breaks at a height of 5.5 feet. ▶ Source: Rhode Island Sea Grant



FOCUS ON APPLICATIONS

HAILSTONES The largest hailstone ever recorded fell at Coffeyville, Kansas. It weighed 1.67 pounds and had a radius of about 2.75 inches.

64. DANCING The number C of calories a person burns performing an activity varies directly with the time t (in minutes) the person spends performing the activity. A 160 pound person can burn 73 Calories by dancing for 20 minutes. Write a linear model that gives C as a function of t. Then estimate how long a 160 pound person should dance to burn 438 Calories. ▶ Source: *Health Journal*

65. HAILSTONES Hailstones are formed when frozen raindrops are caught in updrafts and carried into high clouds containing water droplets. As a rule of thumb, the radius r (in inches) of a hailstone varies directly with the time t (in seconds) that the hailstone is in a high cloud. After a hailstone has been in a high cloud for 60 seconds, its radius is 0.25 inch. Write a linear model that gives r as a function of t. Then estimate how long a hailstone was in a high cloud if its radius measures 2.75 inches. ▶ Source: National Oceanic and Atmospheric Administration

66. GEOMETRY CONNECTION When the length of a rectangle is fixed, the area A (in square inches) of the rectangle varies directly with its width w (in inches). When the width of a particular rectangle is 12 inches, its area is 36 square inches. Write an equation that gives A as a function of w. Then find A when w is 7.5 inches.