

## Interdisciplinary Application

For use with pages 166–173

### Swimming

**HISTORY** By the mid-nineteenth century, swimming was already established as a popular competitive sport in England. Athletes of the time, who usually used the breaststroke, were shocked by the “windmill thrashing” stroke performed by the North American Indians Flying Gull and Tobacco during an exhibition for the Swimming Society of England. Although the style was much faster, the British, emphasizing endurance over speed, failed to copy the stroke. By the turn of the century, however, the shift from endurance to speed was complete. J. Arthur Trudgen and Frederick Cavill reintroduced the stroke of the American Indians as the crawl.

By the 1900 Olympic games, the backstroke event was added and the crawl was the dominant freestyle form. The breaststroke became a separate event in 1904. Women’s freestyle events first appeared in the 1912 games, and eventually women’s events included all of the strokes.

During the course of the twentieth century, the trend shows that the records and the ages of leading swimmers seem to be shrinking at a constant rate. In addition, the gap in the times for men and women steadily closes. In 1996, Alexander Popov of Russia won the Olympic gold medal in the men’s 100 meter freestyle event with a time of 48.74 seconds. Le Jingyi won her Olympic gold medal in the same event with a time of 54.5 seconds.

#### In Exercises 1-3, use the information above.

1. The Olympic gold medal winning 100 meter freestyle times for men have been decreasing at a rate of 0.20 second per year. Write an expression for the men’s gold medal winning time  $x$  years after 1996.
2. The Olympic gold medal winning 100 meter freestyle times for women have been decreasing at a rate of 0.33 second per year. Write an expression for the women’s gold medal winning time  $x$  years after 1996.
3. Write and solve an equation to find the number of years it will take after 1996 for the men’s and women’s Olympic gold medal winning 100 meter freestyle times to be the same.