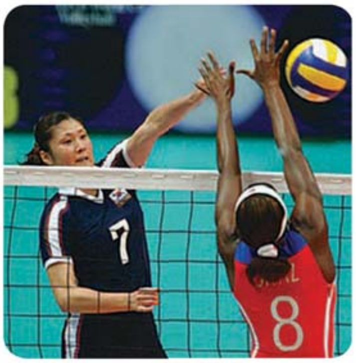
PROBLEM SOLVING

EXAMPLE 2
on p. 589
for Exs. 33–34

33. **VOLLEYBALL** So far in your volleyball match, you have put into play 37 of the 44 serves you have attempted. Solve the equation $\frac{90}{100} = \frac{37 + x}{44 + x}$ to find the number of consecutive serves you need to put into play in order to raise your service percentage to 90%.



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34. **TAKS REASONING** A speed skater travels 9 kilometers in the same amount of time that it takes a second skater to travel 8 kilometers. The first skater travels 4.38 kilometers per hour faster than the second skater.

    a. Use the verbal model below to write an equation that relates the skating times of the skaters.

    $$\frac{\text{Distance for skater 1}}{\text{Skater 1 speed}} = \frac{\text{Distance for skater 2}}{\text{Skater 2 speed}}$$

    b. Solve the equation in part (a) to find the speeds of both skaters.

    c. How long did the skaters skate? *Explain* your answer.

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EXAMPLE 6
on p. 592
for Ex. 35

35. **MUSIC INDUSTRY** From 1994 through 2003, the number n (in millions) of CDs shipped can be modeled by

$$n = \frac{635t^2 - 7350t + 27{,}200}{t^2 - 11.5t + 39.4}, \quad 0 \le t \le 9$$

where t is the number of years since 1994. During which year was the total number of CDs shipped about 720 million?

36. **TAKS REASONING** You can paint a room in 8 hours. Working together, you and your friend can paint the room in just 5 hours.

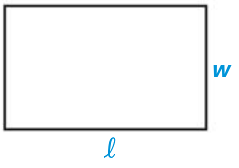
    a. Let t be the time (in hours) your friend would take to paint the room when working alone. Copy and complete the table.

	Work Rate •	Time =	Work Done
You	$\frac{1 \text{ room}}{8 \text{ hours}}$	5 hours	?
Friend	?	5 hours	?

    b. What is the sum of the expressions in the table's last column? *Explain*.

    c. Write and solve an equation to find how long your friend would take to paint the room when working alone. *Explain* your answer.

37. **GEOMETRY** *Golden rectangles* are rectangles for which the ratio of the width w to the length ℓ is equal to the ratio of ℓ to $\ell + w$. The ratio of the length to the width for these rectangles is called the *golden ratio*. Find the value of the golden ratio using a rectangle with a width of 1 unit.



= WORKED-OUT SOLUTIONS on p. WS1

= TAKS PRACTICE AND REASONING