

PROBLEM SOLVING

EXAMPLE 1

on p. 110
for Exs. 47, 49

EXAMPLE 2

on p. 111
for Exs. 48, 50

47. **ART** The area of a square painting is 3600 square inches. Find the side length of the painting.

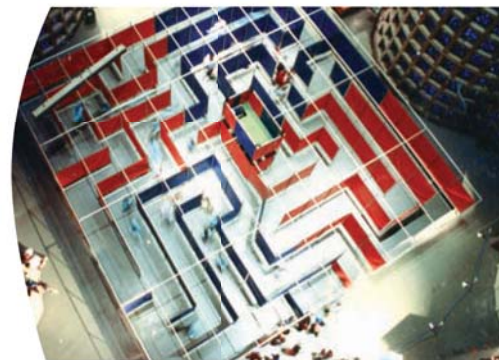
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48. **SOCCER** Some soccer drills are practiced in a square section of a field. If the section of a field for a soccer drill is 1620 square yards, find the side length of the section. Round your answer to the nearest yard.

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49. **MAZES** The table shows the locations and areas of various life-size square mazes. Find the side lengths of the mazes. Then tell whether the side lengths are *rational* or *irrational* numbers.

Location of maze	Area (ft ²)
Dallas, Texas	1225
San Francisco, California	576
Corona, New York	2304
Waterville, Maine	900



Maze at Corona, New York

50. **TAKS REASONING** You plan to use a square section of a park for a small outdoor concert. The section should have an area of 1450 square feet. You have 150 feet of rope to use to surround the section. Do you have enough rope? *Explain* your reasoning.
51. **MATH HISTORY** To calculate the value of the irrational number π , the Greek mathematician Archimedes first estimated the square root of a certain integer x . He found that \sqrt{x} was between $\frac{265}{153}$ and $\frac{1351}{780}$. Find the value of x . *Explain* how you got your answer.
52. **MULTI-STEP PROBLEM** The Kelvin temperature scale was invented by Lord Kelvin in the 19th century and is often used for scientific measurements. To convert a temperature from degrees Celsius ($^{\circ}\text{C}$) to kelvin (K), you add 273 to the temperature in degrees Celsius.
- Convert 17°C to kelvin.
 - The speed s (in meters per second) of sound in air is given by the formula $s = 20.1 \cdot \sqrt{K}$ where K is the temperature in kelvin. Find the speed of sound in air at 17°C . Round your answer to the nearest meter per second.
53. **TAKS REASONING** A homeowner is building a square patio and will cover the patio with square tiles. Each tile has an area of 256 square inches and costs \$3.45. The homeowner has \$500 to spend on tiles.
- Calculate** How many tiles can the homeowner buy?
 - Explain** Find the side length (in feet) of the largest patio that the homeowner can build. *Explain* how you got your answer.