APPROXIMATING SQUARE ROOTS Approximate the square root to the nearest integer.

15. $\sqrt{10}$ **16.** $-\sqrt{18}$ **17.** $-\sqrt{3}$ **18.** $\sqrt{150}$

19. $-\sqrt{86}$ **20.** $\sqrt{40}$ **21.** $\sqrt{200}$ **22.** $-\sqrt{65}$

23. ◆ **TAKS REASONING** Which number is between -30 and -25?

   A $-\sqrt{1610}$ **B** $-\sqrt{680}$ **C** $-\sqrt{410}$ **D** $-\sqrt{27}$

CLASSIFYING AND ORDERING REAL NUMBERS Tell whether each number in the list is a real number, a rational number, an irrational number, an integer, or a whole number. Then order the numbers from least to greatest.

24. $\sqrt{49}$, 8, $-\sqrt{4}$, -3 **25.** $-\sqrt{12}$, -3.7, $\sqrt{9}$, 2.9

26. -11.5, $-\sqrt{121}$, -10, $\dfrac{25}{2}$, $\sqrt{144}$ **27.** $\sqrt{8}$, $-\dfrac{2}{5}$, -1, 0.6, $\sqrt{6}$

28. $-\dfrac{8}{3}$, $-\sqrt{5}$, 2.6, -1.5, $\sqrt{5}$ **29.** -8.3, $-\sqrt{80}$, $-\dfrac{17}{2}$, -8.25, $-\sqrt{100}$

ANALYZING CONDITIONAL STATEMENTS Rewrite the conditional statement in if-then form. Then tell whether the statement is *true* or *false*. If it is false, give a counterexample.

30. All whole numbers are real numbers.

31. All real numbers are irrational numbers.

32. No perfect squares are whole numbers.

33. No irrational numbers are whole numbers.

EVALUATING EXPRESSIONS Evaluate the expression for the given value of x.

34. $3 + \sqrt{x}$ when $x = 9$ **35.** $11 - \sqrt{x}$ when $x = 81$

36. $4 \cdot \sqrt{x}$ when $x = 49$ **37.** $-7 \cdot \sqrt{x}$ when $x = 36$

38. $-3 \cdot \sqrt{x} - 7$ when $x = 121$ **39.** $6 \cdot \sqrt{x} + 3$ when $x = 100$

40. $\dfrac{\sqrt{x}}{x}$ when $x = 4$ **41.** $\dfrac{\sqrt{x}}{5} - 17$ when $x = 25$

42. ◆ **TAKS REASONING** Without using a calculator, find three rational numbers between $-\sqrt{26}$ and $-\sqrt{15}$. *Explain* how you found the numbers.

43. ◆ **TAKS REASONING** If $x = 36$, the value of which expression is a perfect square?

   A $\sqrt{x} + 17$ **B** $87 - \sqrt{x}$ **C** $5 \cdot \sqrt{x}$ **D** $8 \cdot \sqrt{x} + 2$

44. **WRITING** Simplify $\sqrt{x^2}$ using the definition of square root. Then verify your answer using several values of x that are perfect squares.

45. **CHALLENGE** Find the first five perfect squares x such that $2 \cdot \sqrt{x}$ is also a perfect square. *Describe* your method.

46. **CHALLENGE** Let n be any whole number from 1 to 1000. For how many values of n is $\sqrt{n}$ a rational number? *Explain* your reasoning.

○ = **WORKED-OUT SOLUTIONS**
on p. WS1

◆ = **TAKS PRACTICE AND REASONING**