EVALUATING FUNCTIONS Tell whether the function is linear. Then evaluate the function for the given value of *x*.

34. $f(x) = x + 15; f(8)$

35. $f(x) = x^2 + 1; f(-3)$

36. $f(x) = |x| + 10; f(-4)$

37. $f(x) = 6; f(2)$

38. $g(x) = x^3 - 2x^2 + 5x - 8; g(-5)$

39. $h(x) = 7 - \frac{2}{3}x; h(15)$

40. ◄ **TAKS RESPONSE** Which, if any, of the relations described by the equations $y = |x|$, $x = |y|$, and $|y| = |x|$ represent functions? *Explain*.
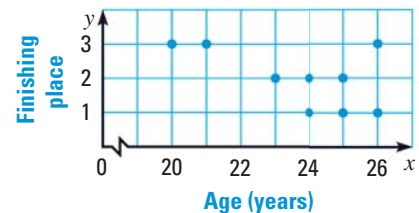
41. **CHALLENGE** Let f be a function such that $f(a + b) = f(a) + f(b)$ for all real numbers a and b. Show that $f(2a) = 2 \cdot f(a)$ and that $f(0) = 0$.

PROBLEM SOLVING

**42.** **BICYCLING** The graph shows the ages of the top three finishers in the Mt. Washington Auto Road Bicycle Hillclimb each year from 2002 through 2004. Do the ordered pairs (age, finishing place) represent a function? *Explain*.

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43. **BASEBALL** The graph shows the number of games started and the number of wins for each starting pitcher on a baseball team during a regular season. Do the ordered pairs (starts, wins) represent a function? *Explain*.
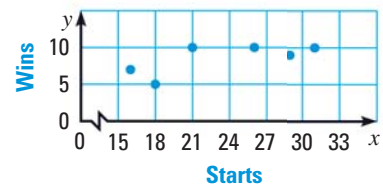
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44. ✎ **GEOMETRY** The volume V of a cube with edge length s is given by the function $V(s) = s^3$. Find $V(4)$. *Explain* what $V(4)$ represents.

45. ✎ **GEOMETRY** The volume V of a sphere with radius r is given by the function $V(r) = \frac{4}{3}\pi r^3$. Find $V(6)$. *Explain* what $V(6)$ represents.

46. ◄ **TAKS RESPONSE** For the period 1974–2004, the average price p (in dollars) of a theater ticket in the United States can be modeled by the function $p(t) = 0.144t + 1.89$ where t is the number of years since 1974. Determine a reasonable domain and range for $p(t)$. *Explain* the meaning of the range.

47. **MULTI-STEP PROBLEM** Anthropologists can estimate a person's height from the length of certain bones. The height h (in inches) of an adult human female can be modeled by the function $h(\ell) = 1.95\ell + 28.7$ where ℓ is the length (in inches) of the femur, or thigh bone. The function is valid for femur lengths between 15 inches and 24 inches, inclusive.

  a. Graph the function, and determine a reasonable domain and range.

  b. Suppose a female's femur is 15.5 inches long. About how tall was she?

  c. If an anthropologist estimates a female's height as 5 feet 11 inches, about how long is her femur?

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

◄ = **TAKS PRACTICE AND REASONING**