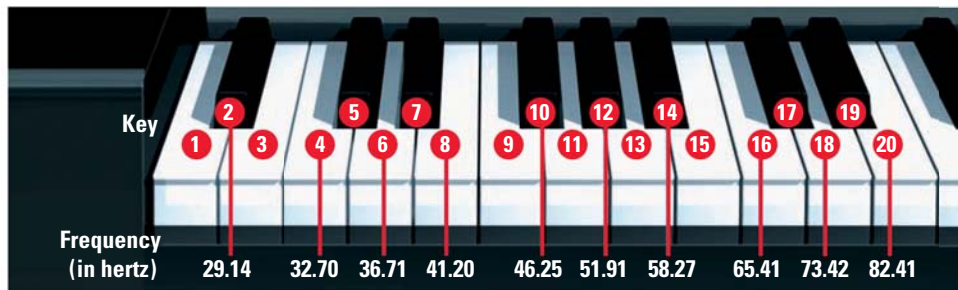


42. **TX TAKS REASONING** A company sells advertising blimps. The table shows the costs of advertising blimps of different lengths. Does the table represent an exponential function? *Explain.*

Length, l (feet)	10	15	20	25
Cost, c (dollars)	400.00	700.00	1225.00	2143.75

43. **TX TAKS REASONING** A weblog, or blog, refers to a website that contains a personal journal. According to one analyst, over one 18 month period, the number of blogs in existence doubled about every 6 months. The analyst estimated that there were about 600,000 blogs at the beginning of the period. How many blogs were there at the end of the period?
- (A) 660,000 (B) 1,200,000 (C) 4,800,000 (D) 16,200,000
44. **TELECOMMUNICATIONS** For the period 1991–2001, the number y (in millions) of Internet users worldwide can be modeled by the function $y = 4.67(1.65)^x$ where x is the number of years since 1991.
- Identify the initial amount, the growth factor, and the growth rate.
 - Graph the function. Identify its domain and range.
 - Use the graph to estimate the year in which the number of Internet users worldwide was about 21 million.
45. **GRAPHING CALCULATOR** The frequency (in hertz) of a note played on a piano is a function of the position of the key that creates the note. The position of some piano keys and the frequencies of the notes created by the keys are shown below. Use the exponential regression feature on a graphing calculator to find an exponential model for the frequency of piano notes. What is the frequency of the note created by the 30th key?



46. **TX TAKS REASONING** In 1830, the population of the United States was 12,866,020. By 1890, the population was 62,947,714.
- Model** Assume the population growth from 1830 to 1890 was linear. Write a linear model for the U.S. population from 1830 to 1890. By about how much did the population grow per year from 1830 to 1890?
 - Model** Assume the population growth from 1830 to 1890 was exponential. Write an exponential model for the U.S. population from 1830 to 1890. By approximately what percent did the population grow per year from 1830 to 1890?
 - Explain** The U.S. population was 23,191,876 in 1850 and 38,558,371 in 1870. Which of the models in parts (a) and (b) is a better approximation of actual U.S. population for the time period 1850–1890? *Explain.*