

Section 1.5 / Linear Equations

#47 on page 80: The average reading score on the NAP tests is given by $y = .155x + 255.37$, where x is the number of years past 1970. In what year would the average reading score be 259.4 if this model is accurate?

$$\begin{array}{r} 259.4 = .155x + 255.37 \\ - 255.37 \qquad \qquad - 255.37 \\ \hline \end{array}$$

Solve for x:

$$\frac{4.03}{.155} = \frac{.155x}{.155}$$

$$26 = x$$

In the year 1996 Answer.

Grades (#59)

To earn an A in a course, a student must get an average score of at least 90 on five tests.

If the first 4 scores were 92, 86, 79 and 96, what should the 5th score be to get an A?

Let x be the 5th test score.

$$\frac{92 + 86 + 79 + 96 + x}{5} = 90$$

$$\cancel{\$} \left(\frac{353 + x}{\cancel{\$}} \right) = 90(5)$$

$$353 + x = 450$$

$$x = 97$$

Sales Tax: (#65) The total cost of a new car, including a 6% sales tax is \$29,998. How much of the total cost is sales tax?

Let c = cost before sales tax

$.06c$ = sales tax

$$C + .06C = \$29,998$$

$$1.06C = 29,998$$

$$C = \frac{29,998}{1.06}$$

$$C = \$28,300$$

Tax: $29,998 - 28,300$
 $= \underline{\$1,698}$

#66 | In wildlife management, the "capture-mark-recapture" technique to estimate various animal/fish populations:

$$\frac{\text{total in population}}{\text{total \# marked}} = \frac{\text{total \# in 2}^{\text{nd}} \text{ capture}}{\text{\# found in 2}^{\text{nd}} \text{ capture}}$$

Suppose that 60 sharks are caught, marked, and released.

If the 2nd capture of 60 sharks gives 20 marked sharks ..., what is the resulting population estimate?

$$B(t) = 20.37 + 1.834t$$

IC
#3

$$47.88 = 20.37 + 1.834t$$

$$\begin{array}{r} -20.37 \\ \hline \end{array} \quad \begin{array}{r} 20.37 \\ \hline \end{array} \quad \underline{\hspace{2cm}}$$

$$\frac{27.51}{1.834} = \frac{1.834t}{1.834} \quad t = 15$$

$$1980 + 15 = 1995$$