

3.1 - Solving 2-Step Equations

✱ get the variable alone

1 EXAMPLE Solve $13 = \frac{y}{3} + 5$.

$$3 \cdot 8 = \frac{y}{\cancel{3}} \cdot \cancel{3}$$

$$24 = y$$

$$+ \rightarrow -$$

$$- \rightarrow +$$

$$\cdot \rightarrow \div$$

$$\div \rightarrow \cdot$$

Solve each equation. Check your answer.

1. $1 + \frac{a}{5} = -1$

$1 + \frac{a}{5} = -1$

$\frac{a}{5} = -2 \cdot 5$

$a = -10$

3. $-1 = 3 + 4x$

$-4 = 4x$

$-1 = x$

2 EXAMPLE A music store sells a used guitar for \$120. This is \$25 more than $\frac{1}{2}$ the cost of a new guitar of the same brand. What is the cost of a new guitar?

$$\begin{array}{r} 25 + \frac{1}{2}X = 120 \\ -25 \\ \hline X = 95 \end{array}$$

$$X = \$190$$

- 21. Donations** A library receives a large cash donation and uses the funds to double the number of books it owns. Then a book collector gives the library 4028 books. After this, the library has 51,514 books. How many books did the library have before the cash donation and the gift of books?

$b =$ starting #
of books

$$\begin{array}{r}
 2b + 4028 \\
 - 4028 \\
 \hline
 2b = 47,486 \\
 \hline
 b = 23,743
 \end{array}$$

$$b = 23,743 \text{ books}$$

3 EXAMPLE

You order iris bulbs from a catalog. Iris bulbs cost \$.90 each. The shipping charge is \$2.50. If you have \$18.50 to spend, how many iris bulbs can you order?

$b = \text{bulbs}$

$$\begin{array}{r} 2.50 \\ - 2.50 \\ \hline \end{array} + 0.90b = 18.50$$

$$\begin{array}{r} 0.90 \overline{) 16} \\ \underline{0.90} \\ \end{array} = \frac{16}{0.90}$$

$$b = 17.777$$

17 iris bulbs

23. **Cell Phones** One cell phone plan costs \$39.95 per month. The first 500 minutes of usage are free. Each minute thereafter costs \$.35. Write a rule that describes the total monthly cost as a function of the number of minutes of usage (over 500 minutes). Then find the number of minutes of usage over 500 minutes for a bill of \$69.70.

$x =$ minutes over 500

$$\begin{array}{r} 39.95 + 0.35x = 69.70 \\ -39.95 \quad \downarrow -39.95 \\ \hline \end{array}$$

$$\begin{array}{r} 0.35x = 29.75 \\ \hline 0.35 \quad \quad \quad 0.35 \\ \hline \end{array}$$

$$x = 85 \text{ minutes over } 500$$

HW: pg. 122 #11, 18, 22, 29, 33, 39,

