

Alg 2 HW Help for p. 146 #19

Example:

Let's solve a similar problem.

A student has some \$5 bills and \$10 bills in her wallet. She has a total of 7 bills that are worth \$50. How many of each type of bill does she have?

① The problem is asking for two unknowns: how many \$5 bills, and how many \$10 bills.

② Let x = number of \$5 bills and Let y = number of \$10 bills.

③ Since there are 7 bills in all, $x + y = 7$ represents this idea. The value of the \$5 bills is $5x$, and the value of the \$10 bills is $10y$. Because the total value is \$50, we have

$$5x + 10y = 50$$

④ Solve the system:
$$\begin{cases} x + y = 7 \\ 5x + 10y = 50 \end{cases}$$
 by the method of substitution.

Solve equation one for either x or y . Let's solve for y .

$y = 7 - x$ Now substitute this for y into the second equation: $5x + 10(7 - x) = 50$ simplify this:

$$5x + 70 - 10x = 50$$

$$-5x = -20 \Rightarrow x = 4 \quad \text{cont'd} \rightarrow$$

Now substitute this value for x in the first equation to get y .

$$4 + y = 7 \Rightarrow y = 3$$

Check this solution in the second equation:

$$5(4) + 10(3) = 20 + 30 = 50 \quad \checkmark \text{ it checks!}$$

⑤ Interpret the solution in context:

The student has four \$5 bills and three \$10 bills in her wallet.

