GroupDoThis 1.4 Solutions

Name	Lab hour

Solve the following story problems by following the steps outlined. Show your work for full credit.

1. The perimeter of a rectangle is 75 inches. The length of this rectangle is twice the width. Find the length and width. (Follow the steps outlined below.)

Define your variable. I suggest w = width.
If w is the width, give an expression for length. (Use the fact that the length is twice the width.)

w = *width*
$2w$ = *length*

Create a verbal model using the formula for perimeter. (Remember the perimeter of a rectangle is two times the length plus two times the width.)

Perimeter	=	2 times width	+	2 times length

Use the verbal model to make an equation and solve the equation. Circle and label your final answers.

$$Perimeter = 2 * width + 2 * length$$
$$75 = 2w + 2(2w)$$
$$75 = 2w + 4w$$
$$75 = 6w$$
$$\text{(}12.5 = w\text{)}$$

Plug 2w in for length. Plug w in for width. Plug 75 in for the perimeter. Then solve for w. We get the width is 12.5 inches. So the length, which is two times the width, is 12.5 times 2 or 25 inches.

2. Betsy, a recent retiree, requires $6000 per year in extra income. She has $50,000 to invest and can invest in B-rated bonds paying 15% per year or in a Certificate of Deposit (CD) paying 7% per year. If she splits her $50,000 between the two accounts, how much must she invest in each in order to realize exactly $6000 in interest in one year? You may assume simple interest. (Follow the steps outlined below.)

Define your variable. I suggest you let x = amount invested in the 15% account.
If we do this, give an expression for the amount invested in the 7% account.

x = amount invested in the 15% account
$50000 - x$ = amount invested in the 7% account

Create a verbal model. (Remember her income will be made up of the interest earned from the first account plus the interest earned from the second account. Since it's simple interest, the interest earned is the interest rate times the amount invested.)

Total interest earned	=	Interest from 15% acct.	+	Interest from 7% acct.

Use the verbal model to make an equation and solve the equation. Circle and label your final answers.

$$6000 = .15x + .07(50000 - x)$$
$$6000 = .15x - .07x + 3500$$
$$2500 = .08x$$
$$31250 = x$$

Interest from the two separate accounts is found by multiplying the rate (in decimal form) by the amount invested in that account. So .15x is the interest earned from the 15% account. And .07(50000 - x) is the interest earned from the 7% account. Distribute the .07 and combine like terms. You should get x, the amount in the 15% account, to be $31,250. That leaves over $50,000 minus $31,250 or $18,750 to be put into the 7% account.