

Problems Involving Parentheses

Ex) If John has \$80 and Bill has \$16, how much would John have to give Bill so that John would have three times as much as Bill?

Let x = Amount John gives Bill

$80 - x$ = Amount John has after giving x dollars to Bill

$16 + x$ = Amount Bill has after John gives him x dollars

$$80 - x = 3(16 + x)$$

$$80 - x = 48 + 3x$$

$$32 = 4x$$

$$8 = x$$

John must give Bill \$8

Ex) If 4 is added to a certain number, and the sum is multiplied by 3, the resulting number is 5 times the original one. Find the original number.

Let the number = x

$$3(4 + x) = 5x$$

$$12 + 3x = 5x$$

$$12 = 2x$$

$$6 = x$$

Ex) The length of a rectangle is 2 in longer than the width. If twice the length is added to 4 times the width the resulting number is 76 in. Find length and width.

let $x = \overset{\text{width}}{\text{width of Rectangle}}$
 $x+2 = \text{length of Rectangle}$

$$2(x+2) + 4(x) = 76$$

$$2x+4 + 4x = 76$$

$$6x+4 = 76$$

$$6x = 72$$

$$x = 12$$

$$\text{Width} = \boxed{12 \text{ in}} \quad \text{length} = 12+2 = \boxed{14 \text{ in}}$$