

Calculating a Percentage

Determining percentages is a common calculation in computer programming. In mathematics, the % symbol is used to indicate a percentage, but most programming languages don't use the % symbol for this purpose. In a program, you usually have to convert a percentage to a decimal number. For example, 50 percent would be written as 0.5 and 2 percent would be written as 0.02.

Let's step through the process of writing a program that calculates a percentage. Suppose a retail business is planning to have a storewide sale where the prices of all items will be 20 percent off. We have been asked to write a program to calculate the sale price of an item after the discount is subtracted. Here is the algorithm:

1. Get the original price of the item.
2. Calculate 20 percent of the original price. This is the amount of the discount.
3. Subtract the discount from the original price. This is the sale price.
4. Display the sale price.

In Step 1 we get the original price of the item. We will prompt the user to enter this data on the keyboard. Recall from the previous section that prompting the user is a two-step process: (1) display a message telling the user to enter the desired data, and (2) reading that data from the keyboard. We will use the following pseudocode statements to do this. Notice that the value entered by the user will be stored in a variable named `originalPrice`.

```
Display "Enter the item's original price."  
Input originalPrice
```

In Step 2, we calculate the amount of the discount. To do this we multiply the original price by 20 percent. The following statement performs this calculation and stores the result in the discount variable.

```
Set discount = originalPrice * 0.2
```

In Step 3, we subtract the discount from the original price. The following statement does this calculation and stores the result in the `salePrice` variable.

```
Set salePrice = originalPrice - discount
```

Last, in Step 4, we will use the following statement to display the sale price:

```
Display "The sale price is $", salePrice
```