Converting a Math Formula to a Programming Statement

Suppose you want to deposit a certain amount of money into a savings account, and then leave it alone to draw interest for the next 10 years. At the end of 10 years you would like to have $10,000 in the account. How much do you need to deposit today to make that happen? You can use the following formula to find out:

$$P = \frac{F}{(1+r)^n}$$

The terms in the formula are as follows:

- P is the present value, or the amount that you need to deposit today.
- F is the future value that you want in the account. (In this case, F is $10,000.)
- r is the annual interest rate.
- n is the number of years that you plan to let the money sit in the account.

It would be nice to write a computer program to perform the calculation, because then we can experiment with different values for the terms. Here is an algorithm that we can use:

1. Get the desired future value.
2. Get the annual interest rate.
3. Get the number of years that the money will sit in the account.
4. Calculate the amount that will have to be deposited.
5. Display the result of the calculation in Step 4.

In Steps 1 through 3, we will prompt the user to enter the specified values. We will store the desired future value in a variable named `futureValue`, the annual interest rate in a variable named `rate`, and the number of years in a variable named `years`.

In Step 4, we calculate the present value, which is the amount of money that we will have to deposit. We will convert the formula previously shown to the following pseudocode statement. The statement stores the result of the calculation in the `presentValue` variable.

```
Set presentValue = futureValue / (1 + rate)^years
```

In Step 5, we display the value in the `presentValue` variable.