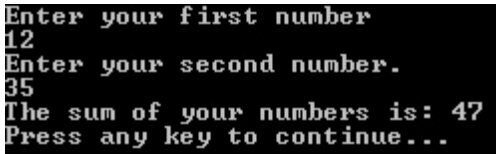


A simple calculator with variables

Earlier we discovered how to use variables to remember text, but we can also use variables to remember (store) numbers as well. If we instruct the computer to assign a number to a variable our Small Basic calculator becomes much more useful. Type in this longer program and run it.

```
1 TextWindow.WriteLine("Enter your first number")
2 firstNumber = TextWindow.ReadNumber()
3 TextWindow.WriteLine("Enter your second number.")
4 secondNumber = TextWindow.ReadNumber()
5 result = firstNumber + secondNumber
6 TextWindow.WriteLine("The sum of your numbers is: " + result)
```

When you run the program the output should look like the image below.



```
Enter your first number
12
Enter your second number.
35
The sum of your numbers is: 47
Press any key to continue...
```

This program uses 3 variables. The first one `firstNumber` appears in line 2 and stores the first number that we type in. The second variable `secondNumber` in line 4 stores the next number that we type in. Finally in line 5, the numbers stored in `firstNumber` and `secondNumber` are added together and the result is stored in the variable `addResult`. Line 6 prints the result onto the screen.

The advantages of using variables should now be obvious. This program can be run as many times as we like and each time we can choose different numbers, and we never need to change the code. Below, the same code is used to add together 100 and 12.713.

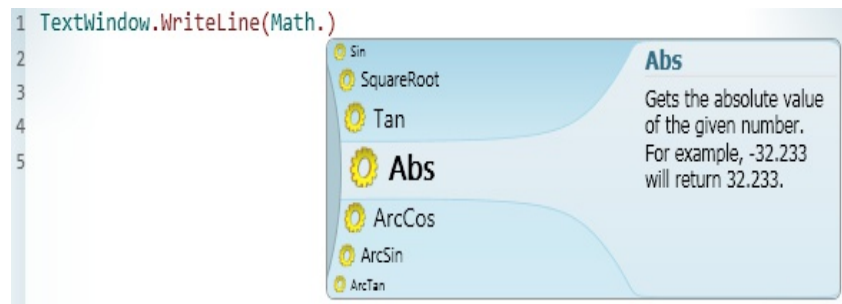
```
Enter your first number.  
100  
Enter your second number.  
12.713  
The sum of your two numbers is: 112.713  
Press any key to continue...
```

Further mathematics

Small Basic and other languages provide the programmer with useful maths functions. Here are a few that may be useful in a primary school.

```
1 TextWindow.WriteLine(Math.Remainder(12, 8))
2 TextWindow.WriteLine(Math.SquareRoot(67))
3 TextWindow.WriteLine(Math.Pi)
4 TextWindow.WriteLine(Math.GetRandomNumber(26))
```

There are many more Math functions to be found in Small Basic. Have a look at the list of functions in the Math object (use intellisense) and experiment with them yourself.



Here's an example of how to find the area of a circle with a radius of 4 units.

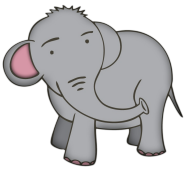
```
1 The area of a circle is Pi (~3.14) times the radius squared.
2 TextWindow.WriteLine("The area of the circle:" + Math.Pi * 4 * 4)
```



Have a go at these questions and any of your own that you can create.

Activity 4: the math object

1. Can you write a program that calculates the area of a rectangle. It should ask for two numbers, multiply them together and then return the result?
2. Write a line of code that calculates the circumference of a circle using $2 \times \text{Pi} \times \text{radius}$.
3. Write a line of code that calculates $(289.89 - 79)$ divided by 0.6
4. Generate a random number between 0 and 100 then multiply it by 0.1 .
5. Find the remainder of $5876 / 12$



Remember to use the Math object because it contains lots of useful functions and constants. For example, Math.PI saves you from having to write or remember 3.1415926535897.