Task One

# Introduction

1. import turtle
2. t = turtle.Turtle()
3. t.forward(100)
4. t.left(45)
5. t.forward(30)

Click on the “Task 1” button to load in the above text, then click the “Run” button and see what happens.

Here you are creating a new turtle, called **t**, then telling it to go forward 100 units, go left 45 degrees, then go forward again by 30 units.

Modify the above code to make the turtle go forward by 200 units, turn 90 degrees left, then go forward by another 100 units.

Other commands you can use to move the **t** are **t.right** and **t.backward**. These are used in exactly the same way as **t.forward** and **t.left**.

Add to the code to make the turtle turn right by 40 degrees, then go backward by 200 units after it has done its original forward-left-forward movement.

# Numbers and variables

You are using a language called Python to tell the turtle what to do.

Python can also do other things, such as basic maths.

1. print 3
2. print 8+11
3. print 9-10
4. print 40\*5
5. print 10/2
6. print ((87+3)/30\*(51-3\*9))/6

Type in the above code and click “Run”. You should see the results of these arithmetic operations in the results box.

**+** represents addition, **-** represents subtraction, **\*** represent multiplication, and **/** represents divide. These can be combined to make very long arithmetic expressions, just like in maths.

1. x = 5
2. print x
3. x = 8
4. print x
5. x = x + 1
6. print x
7. print x\*2

Type in the above code and click “Run”.

Here, we are using a **variable**. I am creating some storage space called **x** which I am using to hold a number. Notice how the **print x** statements all result in a different number being output.

Line 5 is

1. x = x + 1

This can be thought of as **the new value of x** is set to be **the old value of x** plus 1. This has the result of increasing the stored value of **x** by 1.

# Using numbers and variables

1. import turtle
2. t = turtle.Turtle()
3. x = 100
4. t.forward(x)
5. t.left(45)
6. t.forward(x)

Click on “Task 1” and modify the code so it looks like the above. (Changes to be made have been highlighted) Try modifying the value of x on line 4 and see how this affects the shape drawn by the turtle.

Notice how the two lines drawn are the same length. The code can be modified to make the second line twice as long as first by changing lines 7 as follows:

1. t.forward(x)
2. t.left(45)
3. t.forward(x\*2)

Try changing the code to make:

* The second line three times as long as the first line
* The first line 40 units shorter than the second line.

# Draw a square

Make the turtle draw a square with edges of size 100. Try to use a variable to control the length of the square’s sides, as this will make it easy to resize the square.

Try to draw the biggest square you can without the turtle going out of the rectangle.