

COMMAND THE ROBOT 2

What commands would you give to make the turtle go around the rectangle and come back to its starting position?



This activity will help you to start writing programs to command the robot even if you have never done anything like this before and you know nothing about coding. The LOGO language is simple to learn. You can start coding and get some pleasing results with a few commands.

The following LOGO commands are sufficient to make the robot-turtle run around a rectangular path.

Changing the numbers changes the lengths and angles.

`forward 100 (or fd 100)` moves the turtle forward drawing a line 100 units in length.

`back 100 (or bk 100)` moves the turtle backward drawing a line 100 units in length.

`right 90 (or rt 90)` turns the turtle through 90 degrees to the right (clockwise).

`left 90 (or lt 90)` turns the turtle through 90 degrees to the left (anti-clockwise).

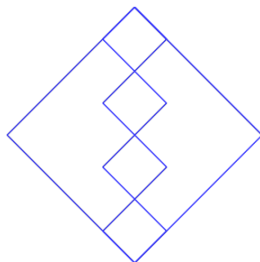
What would you expect the following two programs to do?

PROGRAM 1	PROGRAM 2
<pre>forward 70 right 90 forward 130 right 90 forward 70 right 90 forward 130 right 90</pre>	<pre>repeat 2 [forward 70 right 90 forward 130 right 90]</pre>

Did you guess that both programs do exactly the same thing, that they make the turtle move around a rectangle as above, but only once? This shows you how the repeat command works.

Here are 5 more commands:

`clearscreen (cs)` , `hideturtle (ht)` , `showturtle (st)` , `penup (pu)` , `pendown (pd)`.



With these commands together with the commands: `forward`, `back`, `right`, `left`, `repeat` can you write a program to draw this 5-square pattern?

You can download free Logo software, either FMSLogo for Microsoft Windows from <http://fmslogo.sourceforge.net/> or

ACSLogo for Mac OS X from <http://www.alancsmith.co.uk/logo/>

Both come with a Tutorial to help you to get started.

HELP

Experiment and draw some patterns of your own before you try the 5-square challenge.

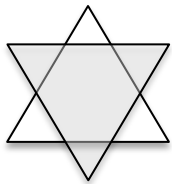


There are small toy robots with a pad of keys on their backs so that children can press keys for 0, 1, ...9 and keys for forward, back, right and left.

Very young children learn to send the robot wherever they want it to go and avoid obstacles on the way.

NEXT

Write a program to draw an equilateral triangle. You can use the commands right 60 and left 60. The right and left commands can be used to turn through any angle.



Write a program to draw this star pattern.

Draw your own pattern and write commands for the turtle to draw it.

See **First Forward into Logo** on the NRIC website <https://nrich.maths.org/8045> for a series of guided challenges to help you to learn to code in the Logo language, learning a few more commands with each new pattern you draw like the images below. Each challenge helps learners to reinforce and develop understanding of geometry.

This **First Forward into Logo Series** culminates in an introduction to Lisp programming in Logo to sum simple series and carry out algebraic processes. Logo gives you a sound foundation on which to go forward to learn coding in the latest languages.

