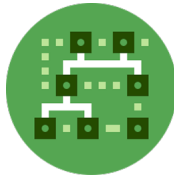


## Year 1, Unit 4: Drawing with Algorithms 2

**Unit aim:** Learning how to draw simple shapes on a grid.

**Lesson objective:** Understanding rectangles and drawing them around the Scare-D kittens.

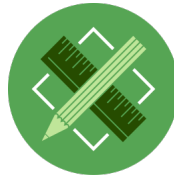
### Concepts



ALGORITHMS



LOGIC



CREATING

### Assumptions

Students should be familiar with using Scratch to create simple algorithms.

### Materials

Project: Drawing-With-Algorithms-2.sb2 (Scratch file)  
Worksheet: Drawing with Algorithms 2.1, 2.2  
Video: Drawing with Algorithms 2

### Vocabulary

Algorithm  
Forward, Back, Left, Right, Up, Down, Pen, Grid

### Definitions

Algorithm: A sequence of steps to do something

### Summary

In this lesson, students will be drawing various shapes by programming algorithms in Scratch.

Worksheet: **Drawing with Algorithms 2.1** - This worksheet contains an explanation of how the Scratch project works.

Worksheet: **Drawing with Algorithms 2.2** - A worksheet containing 3 tasks which the students may use to help create the algorithms which they will try out in the Drawing-With-Algorithms-2 Scratch project.

## Lesson Plan

Stage	Instructions	Timings
Lead-in	Explain to the students that in this lesson the students will be drawing shapes around two Scare-D kittens on a grid using algorithms in Scratch.	5 mins
Practice 1	<p><b>Student Grouping:</b> As a class</p> <ul style="list-style-type: none"> <li>• Show the video - <b>Drawing with Algorithms 2</b></li> <li>• Check with the students that they are familiar with the various features of the project and the way in which pen is controlled:               <ul style="list-style-type: none"> <li>◦ Selecting Start points using the coloured buttons</li> <li>◦ Forward (1-4), Back (1-4), Left and Right control buttons</li> <li>◦ The PEN UP and PEN DOWN buttons</li> <li>◦ The Program List</li> <li>◦ The Run and CS buttons</li> </ul> </li> <li>• Remind the students that the pen always starts facing towards the right and that 'Forward' relates to the direction the pen is pointing in.</li> </ul>	10 mins
Practice 2	<p><b>Student Grouping:</b> In Pairs</p> <ul style="list-style-type: none"> <li>• Use the worksheets <b>Directional Algorithms 2.1</b> and <b>2.2</b>.</li> <li>• Ask the students to download and open the <b>Drawing-with-Algorithms-2</b> Scratch project.</li> </ul> <p><b>Note: The students should click on the Green Flag prior to building their algorithms.</b></p> <ul style="list-style-type: none"> <li>• Worksheet 2.1 provides support to use the Scratch project.</li> <li>• Worksheet 2.2 provides a table with three tasks to draw simple shapes of various sizes from various start points (indicated by the colour at the top of each column).</li> <li>• Students may use the table to write out each algorithm and try them out in the Scratch project.</li> <li>• Students can check progress using the RUN button and they will need to clear one program, using CS, before moving on to the next.</li> <li>• Remind them that to correct individual commands in the program list they will need to toggle out of full-screen mode and click on the x against the command they wish to delete in the program list.</li> <li>• If students have not clicked on the correct coloured button to set the start point they do not need to clear the program using the CS Button - simply click on the correct colour and Run the program again.</li> </ul> <p><b>Note: The algorithm template contains space for up to 16 entries. Students should be reminded that they do not have to fill the table to the bottom.</b></p>	30 mins
Extension Activity	Students who progress quickly should attempt to edit their third algorithm (without using the algorithm template) to create a shape that still goes around both kittens but is never more than one square away from any kitten. The line should be as close to the kittens as possible without touching them.	5 mins